MODERN PACKAGING

PHOTO BY TIETGENS

Thermoformed plastics: rising new star | **February 1958**

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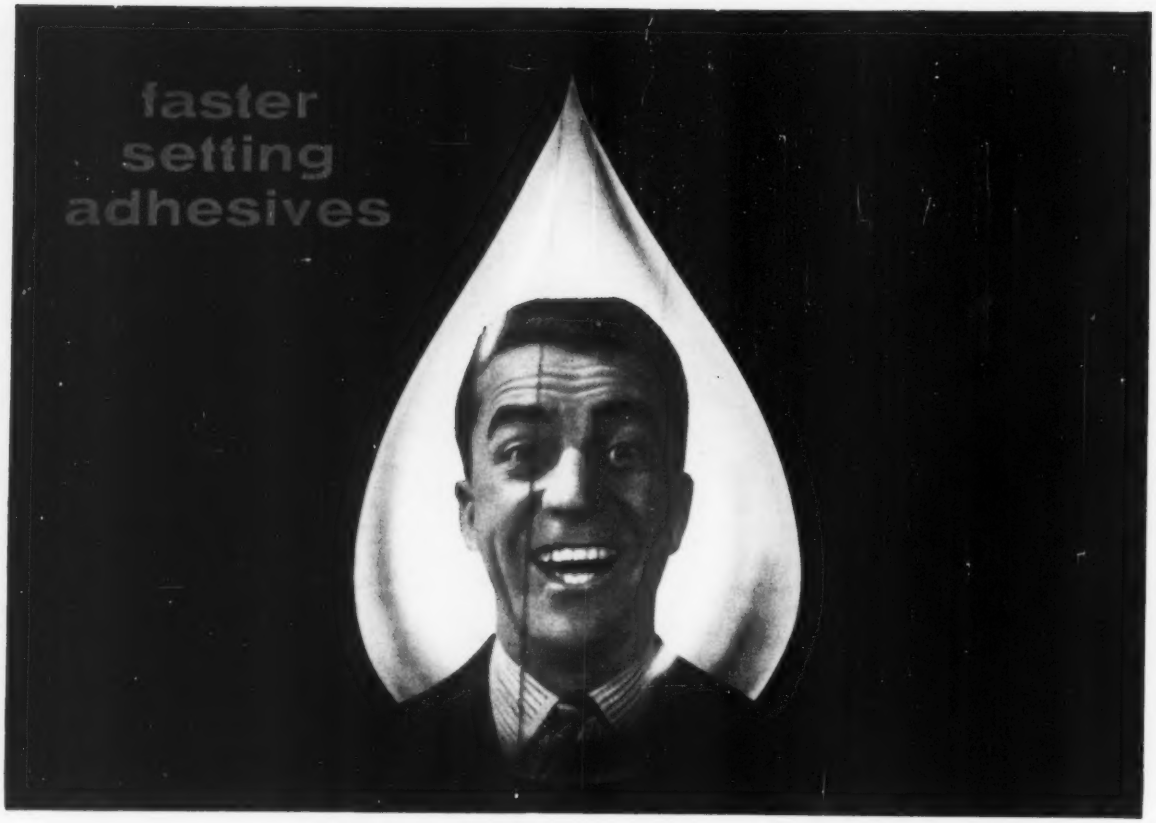

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ALTERNATE MONDAY EVENINGS

MODERN PACKAGING

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Modern Packaging Executive and Editorial Offices, 575 Madison Avenue, New York 22, N. Y.

Modern Packaging published monthly by Modern Packaging Corp., at Emmett St., Bristol, Conn. Modern Packaging Encyclopedia Issue published as second issue in November by Packaging Catalog Corp. at Emmett St., Bristol, Conn. Second-class mail privilege authorized at Bristol, Conn. Subscription rates (including Modern Packaging Encyclopedia Issue), payable in U.S. currency; In U.S., its possessions, and Canada, 1 year $7, 2 years $12, 3 years $17; all other countries, 1 year $20, 2 years $35, 3 years $50. Single copies 75 cents each (Show Issue, $1; Encyclopedia Issue, $3) in U.S., its possessions, and Canada; all other countries $2 (Show Issue, $2.50; Encyclopedia Issue, $6).

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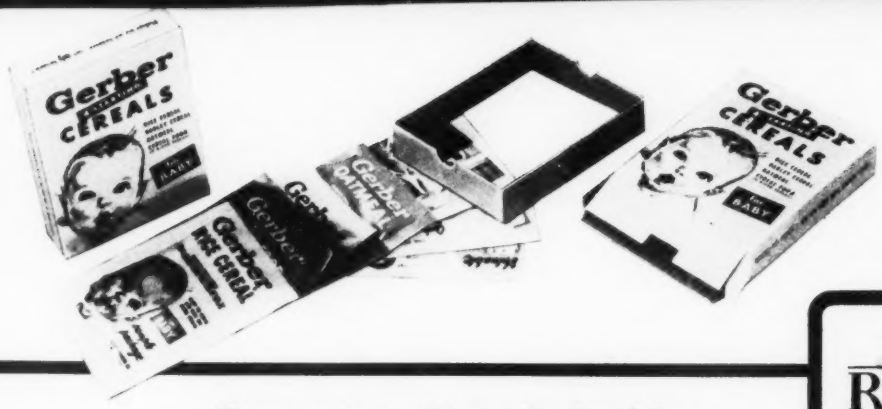

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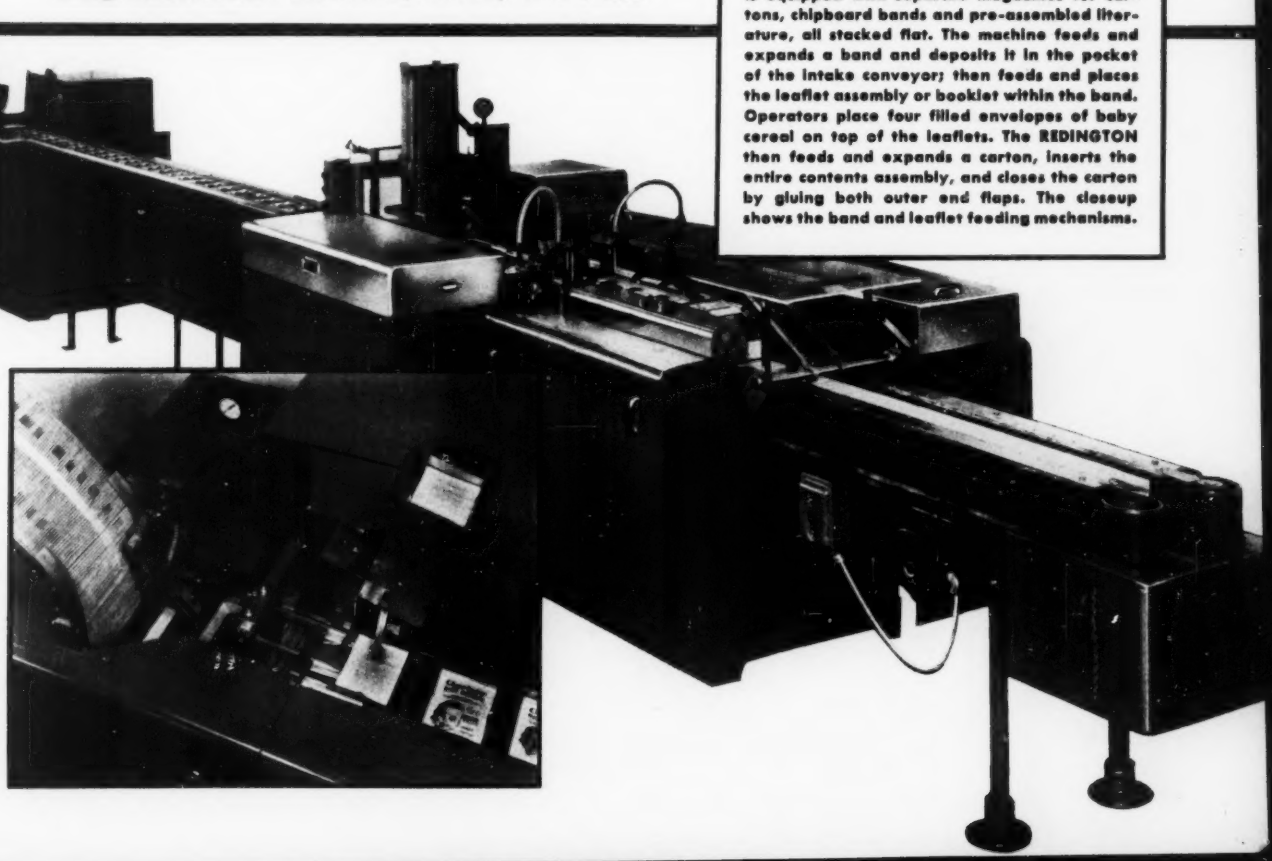

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Challenge from slot machines

The vending-machine business has never looked better than it does today. Product sales are estimated at more than $2 billion for 1957, a 7% hike over '56 and up more than $1 billion over 1949. An estimated 3,471,700 machines are now in use, a 17% gain over '56.

But with all this prosperity, the National Automatic Merchandising Assn. is still not satisfied. At the association's recent convention, John T. Pierson, its president, challenged food processors and container manufacturers to discover new markets and to expand sales of their products further through automatic merchandising. There is a vital need, he said, for products and packages designed specifically for automatic merchandising.

While complete meal service through vending machines is ripe for expansion, to date, he said, "there is no new container which can increase sales of hot food through the machines. It doesn't take much imagination to realize that a person would like to eat hot soup from a more attractive package than is now available."

He could have mentioned other problems, too. Master cartons specifically tailored to cut time and labor in refilling the machines are still the exception rather than the rule. And many product packages need to be reshaped and more tightly wrapped to avoid interfering with the dispensing mechanisms. The recent consternation among vending-unit manufacturers caused by the unexpected switch in cigarettes to flip-top boxes is a case in point.

Problems in standardization of package size and shape could well be threshed out by a combined committee from NAMA and the Packaging Institute. The National Bureau of Standards could be brought in to formalize the results. New package designs need the critical attention—and interest—of both packaging suppliers and packagers.

The potential market for vended products is tremendous. Taking food as an example again, about 52,000,000 factory workers and school children buy lunch away from home, according to Mr. Pierson. Adding the purchases of night-shift workers, after-hours supermarket sales, and candy and gum figures to this total, it is obvious that scores of nationally advertised food products could gain a powerful sales thrust by taking advantage of this particular form of automatic merchandising.

If vending machines are to realize their full potential as around-the-clock salesmen for an ever-widening range of products, it is going to take the full cooperation of all industries concerned—venders, packagers and suppliers. It's past time for this coordination of effort to begin.

The Editors

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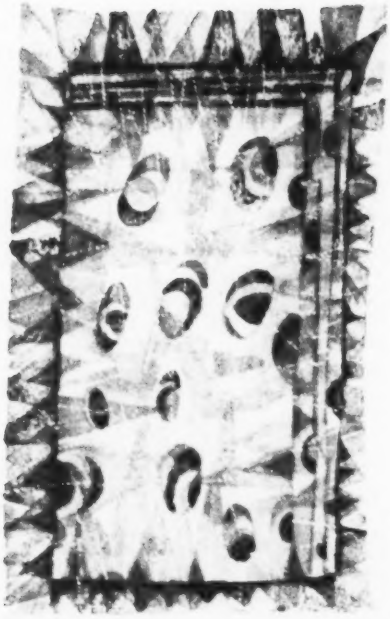
The demand for packaged luncheon meats from Swift & Co. is growing fast and Dobeckmun Durafilm plays an active part in specially tailored 3-side seal vacuum pack liners. Sanitary, sturdy, bright and transparent—this inexpensive packaging keeps attracting repeat sales for retailers everywhere.

Packages for performance...



Dobeckmun Durafilm is a loyal friend
to the sales-making freshness of food. This extrusion or lamination
of transparent plastic films achieves superior product protection
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Durafilm is tough, durable, moisture proof
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From your own plant all the way
to the consumer's kitchen—
your product is packaged for performance by

The Dobeckmun Company,
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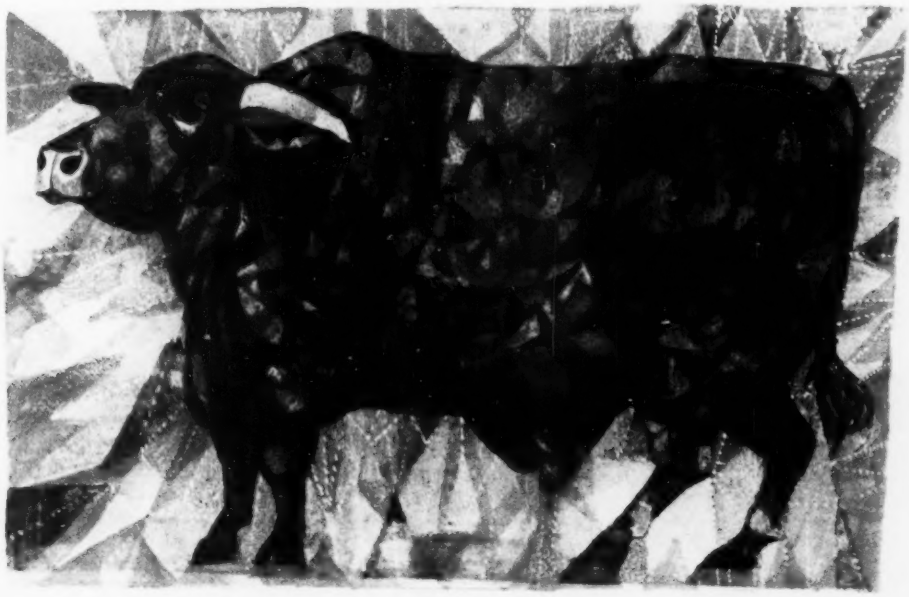
Offices in most principal cities

*DuPont Polyester Film



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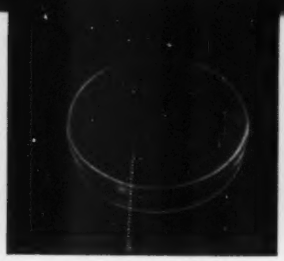
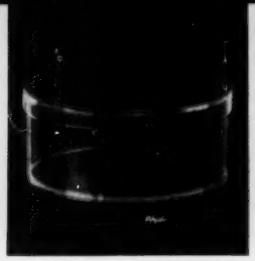


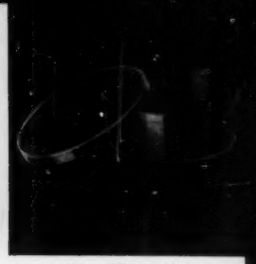
No. 32 diam: 2¾" x ⅝" deep

No. 10 diam: 3⅛" x 1⅞" deep

No. 12 diam: 3²⁵⁄₃₂" x 2⅛" deep
(Plastic Snap-on Cover)



No. 15 diam: 3¾" x 1⅝" deep



No. 210 diam: 3⅛" x 1¾" deep
No. 211 (with Polyethylene Lid)

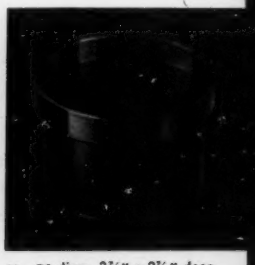
looking for a box that's round?

No. 42F diam: 3⅛" x 2⅝" deep
No. 21F diam: 3⅛" x 1⅛" deep

No. 415 diam: 3²¹⁄₃₂" x 3⅜" deep
(Rigid translucent with clear lid)

No. 420 diam: 3⅛" x 2¼" deep
No. 421 (with Polyethylene Lid)

No. 425 diam: 3⅛" x 3⅜" deep
(Polyethylene Lid only)



No. 72 diam: 3⅞" x 2¾" deep

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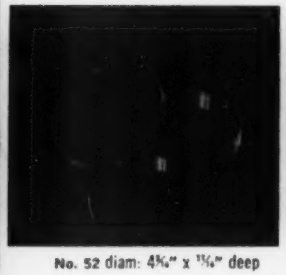
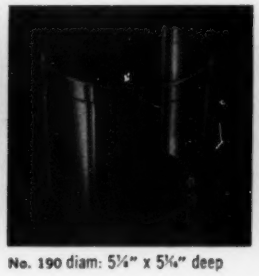
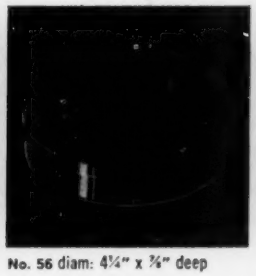


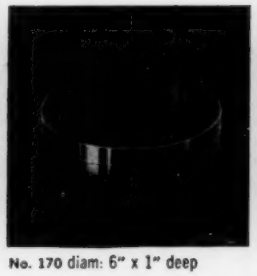
No. 52 diam: 4¾" x ⅞" deep



No. 190 diam: 5¼" x 5¼" deep



No. 56 diam: 4¼" x ⅜" deep



No. 170 diam: 6" x 1" deep

No. 175 diam: 6" x 1½" deep

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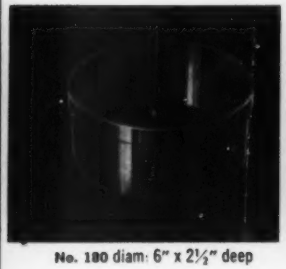
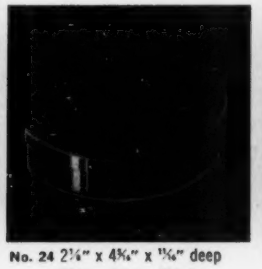
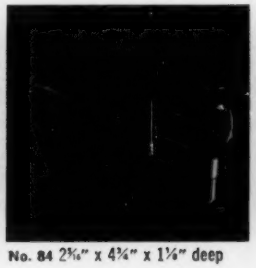


No. 180 diam: 6" x 2½" deep

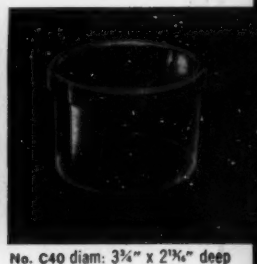
No. 240 diam: 8" x 3" deep
No. 250 diam: 10" x 3½" deep



No. 24 2¼" x 4¾" x 1⅝" deep
No. 54 2¼" x 4¾" x ⅞" deep



No. 84 2⅛" x 4¾" x 1¼" deep



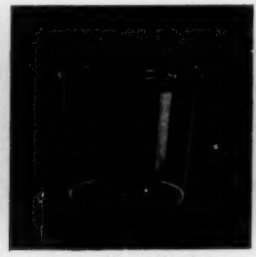
No. C40 diam: 3¾" x 2¾" deep

Rigid Plastic Boxes...all shapes and sizes

No. C50 diam: 3¼" x 5¼" deep

No. C70 diam: 4⅜" x 5¼" deep

No. C189 diam: 7⅛" x 7⅜" deep



No. 09 diam: 3¾" x 3¾" deep

No. 02 1⅞" x 1¹¹⁄₃₂" deep

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Your product, like Goebel Beer, may need especially the brilliant eye-appeal of foil. Or it may also need the superior protection of Reynolds Wrap Aluminum Packaging. Whether one or both, call the nearest Reynolds sales office for full details. Or write to **Reynolds Metals Company**, General Sales Office, Louisville 1, Kentucky.

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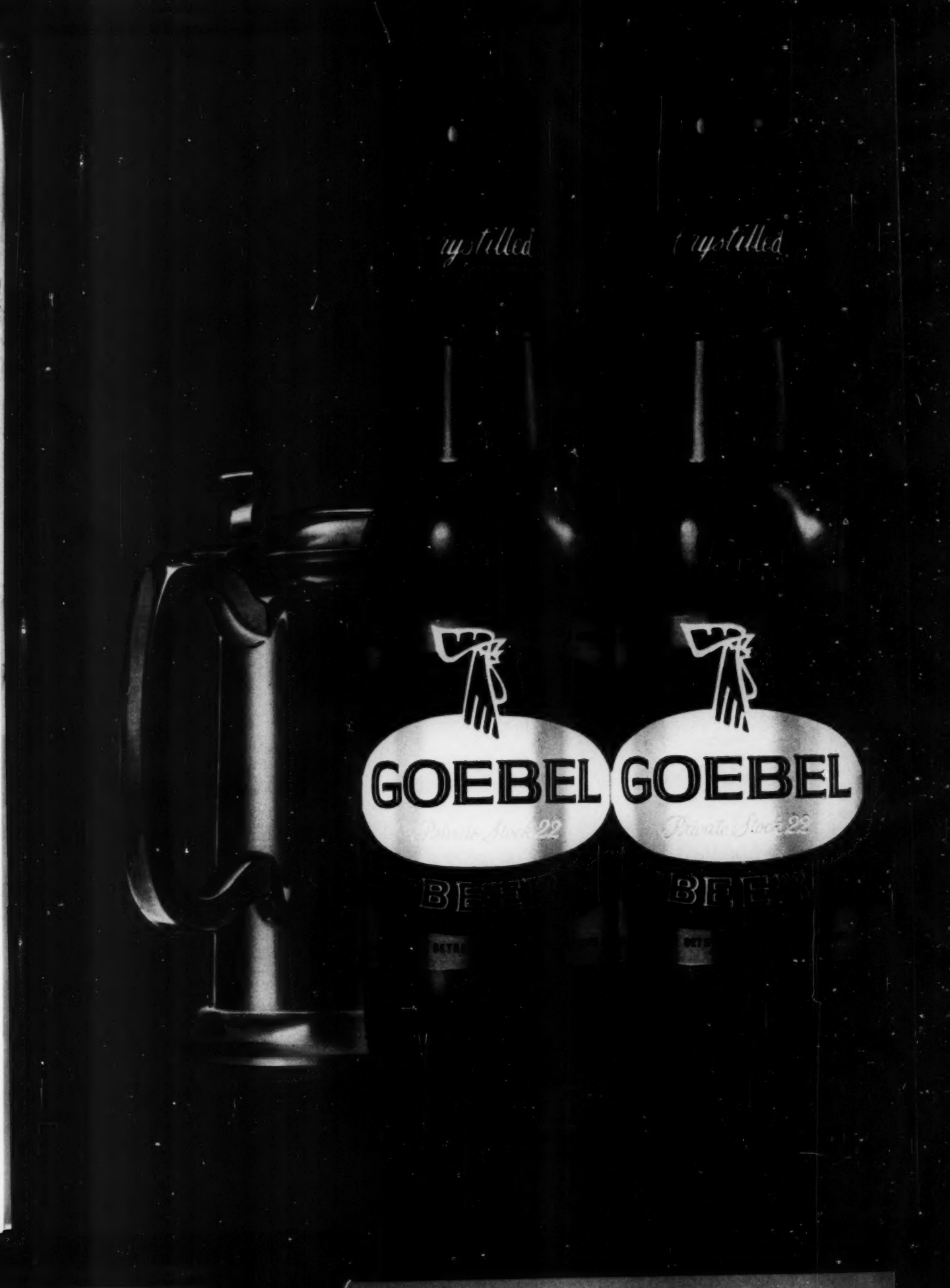
Proven sales power! In a recent survey, 8 out of 10 women recognized this seal. And 7 out of 10 of these preferred products carrying it! Intensively promoted by magazines, network TV, newspapers, spectaculars.

QUALITY PROTECTED WITH REYNOLDS WRAP ALUMINUM PACKAGING

REYNOLDS ALUMINUM

Watch Reynolds all-family television show, "Disneyland" ABC-TV.


GOEBEL
GOEBEL

Sold – and Still Selling

Scientific package design by Western-Waxide can make the impulse sale and keep right on selling in the home. But to do the *complete* selling job of building brand loyalty and making repeat sales, your package must protect all the flavor and freshness of your food product.

This colorful package combines "Taste Excitement," useful serving suggestions and recipes to produce a package that sells both in the store and in the home. The special formula Glosseal® overwrap preserves all the natural goodness of Del Monte raisins. Western-Waxide's excellence in the graphic arts combined with its packaging research and development laboratories can create a package that will do a *complete* selling job for you. There's a Western-Waxide representative near you that can start *your* product on the way to "*increased sales . . . by design.*" Call him now.

Increased Sales
. . . by Design!

CROWN ZELLERBACH WESTERN-WAXIDE DIVISION

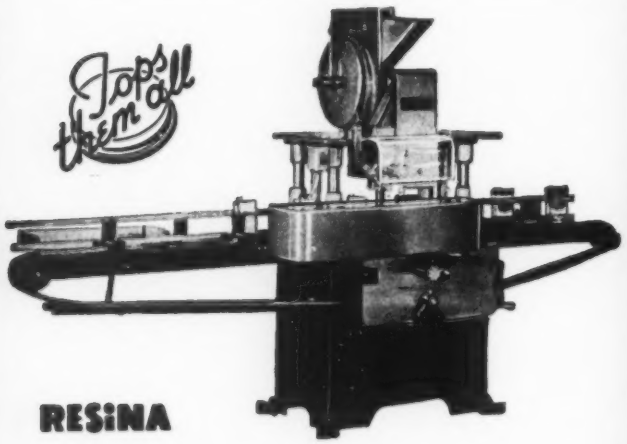
Headquarters Office: 2101 Williams St., San Leandro, Calif. • Plants and Sales Service Offices in Principal Cities of the United States

Manufacturers and converters of plain and printed waxed paper • foil • foil laminates • polyethylene coated paper and poly-film laminates • films • bags • pouches and other specialized flexible packaging materials ©

RESINA CAPPERS

a model for every purpose . . . a speed for every need!

NEW! INNERSEALER



Automatic innerseal machine for selecting and applying standard innerseals to various types and sizes of tin cans as commonly used in the oil industry.
Capacity: 60-120 per minute
Seals from ⅜" to 1½".

AND SPECIAL MACHINERY

Agents in principal cities throughout the United States and Canada.

Write for descriptive literature

RESINA

AUTOMATIC MACHINERY CO., INC.

Brooklyn 31, New York

We're all looking forward to seeing you at our booth No. 613 at the PMMI Show Atlantic City March 25-28

• •

RESINA AGENTS

Arkansas, Louisiana, New Mexico, Oklahoma, Texas, Mississippi
R. P. ANDERSON CO.
2503 West Mockingbird Lane, Dallas 19, Texas

Eastern half of Ohio & West Virginia
ANDERSON ENGINEERING CO.
16360 Broadway, Bedford, Ohio

New York
PAUL BALZE
P. O. Box 191, Tuckahoe, New York

North Dakota, South Dakota, Minnesota, Iowa & Western & North-Eastern Wisconsin
BOOTH & ASSOCIATES
1932 Drew Avenue So., Minneapolis 9, Minn.

Southern California & Arizona
CALIFORNIA-EUREKA BOTTLE CO.
901 North Main St., Los Angeles 54, Cal.

Northern California & Nevada
FOOD EQUIPMENT & SUPPLY CO.
210 Mississippi St., San Francisco, Cal.

New York, New Jersey
HORNNEY & CO.
420 Lexington Avenue, New York 17, N. Y.

Tennessee, Alabama, Georgia, North Carolina & South Carolina
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1414 Morningside Drive, N.E., Atlanta 6, Ga.

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LOUIS L. KEELER
112 East Greenwood Ave., Lansdowne, Penna.

Illinois, Michigan, South-Eastern Wisconsin & North-Western Indiana
L & M SALES CO.
1414 S. Michigan Ave., Chicago 5, Illinois

District of Columbia, Maryland, Virginia
PACKAGING EQUIPMENT CO.
31-25 45th Street, Long Island City 3, N. Y.

Washington & Oregon
RATHKE & CO.
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MR. MARTIN O. TIEMANN
1023 N. Grand Blvd., St. Louis, Missouri

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50 Kearney Road, Needham, Mass.

Western half of Ohio, Southern & North-Eastern Indiana & Kentucky
WILLIAMS SALES CO.
514 Wyoming Avenue, Cincinnati 15, Ohio

Eastern Canada
GRISWOLD ENGINEERING CO., LTD.
146 Bates Road, Montreal P. Q., Canada

Western Canada
THOS. W. MACKAY CO., LTD.
1807 Fir Street, Vancouver, B. C.

for Gold Medal Candy Corporation...

CELLU-CRAFT develops award winning packages*

When the Gold Medal Candy Corporation of Brooklyn, New York wanted to develop a new line of seven candy packages for supermarket sales, they *naturally* came to Cellu-Craft.

For Gold Medal *knows* that Cellu-Craft's 20 years of research, experience and "know-how" go into the development of each new package... that these factors insure readily recognizable, impulse sales building packages.

And Cellu-Craft can do the same for your product! To exploit new or established markets, send your product to Cellu-Craft for expert analysis and review. No obligation, of course.

***1957 National Flexible Packaging Competition**

CELLU-CRAFT PRODUCTS CORPORATION

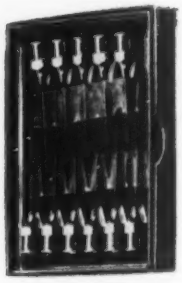
Designers, Converters and Color Printers of Flexible Packaging Materials

General Offices & Plant: **1401 4th AVE., NEW HYDE PARK, N.Y., PRIMROSE 5-8000** *Sales Offices in principal cities*

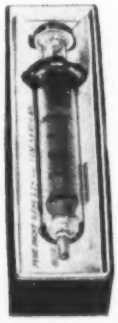
PRINTED CELLOPHANE • POLYETHYLENE • PLIOFILM • FOIL • ACETATE • in ROLLS • BAGS • POUCHES • ENVELOPES • SHEETS

ROWELL BOXES

High in quality... production to meet your need



Set-up boxes in a wide range, made for Cosmetic & Drug Trade throughout the United States. Inquiries also invited from box users in other lines.



E. N. Rowell Co.
INC.
BATAVIA, NEW YORK

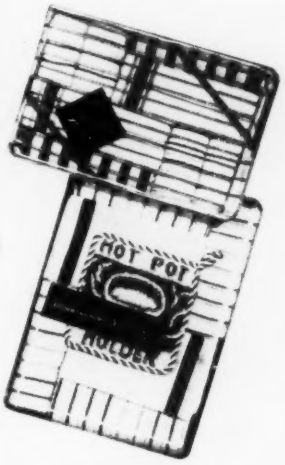
Vitafilm Package Wins Variety Store Silver Award for Startex Mills

Distinctive put-ups of Startex Mills kitchen toweling, utilizing VITAFILM packaging film by Goodyear and designed by Harry Lapow Associates of New York City, have won the Silver Medal Award in the 21st Annual Variety Store Merchandise Packaging Competition.

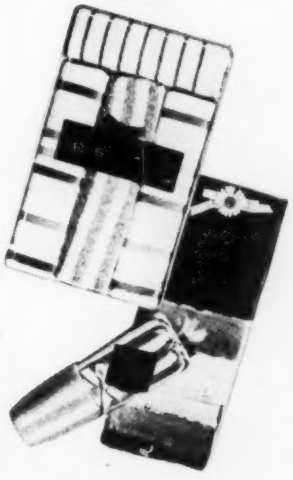
Thanks to the package design, pricing was prominent in a brilliant red bull's-eye, Startex labeling was readily displayed from either side—and a variety of towel sizes was merchandised via the standardized 7" x 10" fold wrap.

Selection of VITAFILM for a host of Startex packages—from heavy bolt goods to attractive gift put-ups—was made for good reasons: extreme durability under stress of rough handling and temperature changes, clarity, printability and ideal workability under manual and high-speed automatic operation, the film's low cost, failure to attract dust and wonderful "feel."

WRITE FOR FACTS ON THE BEST TEXTILE FILM IN THE FIELD! Address: Goodyear, Packaging Films Dept. N-6418 Akron 16, Ohio.



Striking VITAFILM Gift Set Put-Ups by Startex



Vitafilm by GOODYEAR

60th GOODYEAR ANNIVERSARY

The Finest in Sheer Protection

Vitafilm, a Polyvinyl chloride—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

See a

SPECIALIST

for Roll Labels

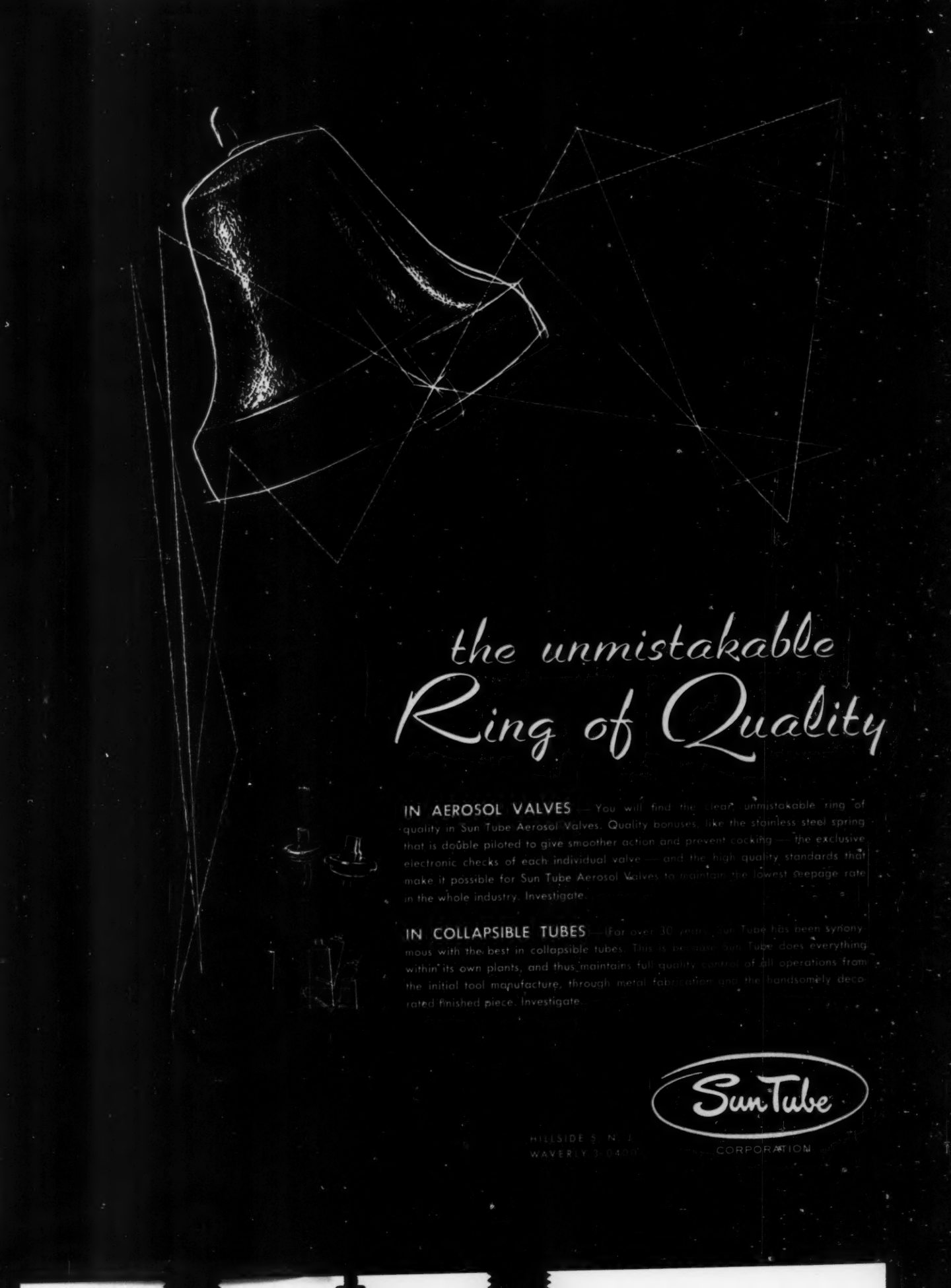
KLEEN-STIK's pioneering research and development work in pressure-sensitive adhesives has now made it possible for *any* Roll Label Printer to produce the KLEEN-STIK labels you need. As a result, you can now obtain Kleen-Stik Roll Labels from the printer of *your choice* and benefit from the direct supervision of the job, and faster service.

makes good sense, doesn't it?

On your next label job, if you need a removable label, or one that's tamperproof—see a specialist—your regular label printer.

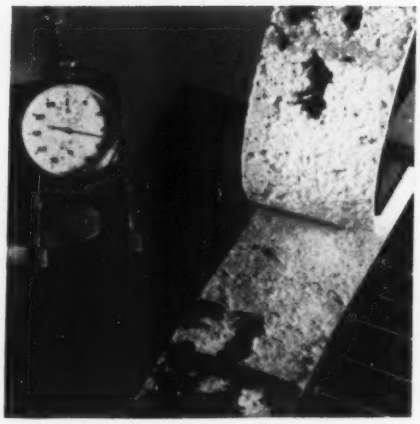
KLEEN-STIK PRODUCTS, INC.
7300 West Wilson Ave. • Chicago 31, Ill.
Plants in Chicago, Newark, Los Angeles and Toronto

Pioneers in Pressure Sensitives for Advertising and Labeling

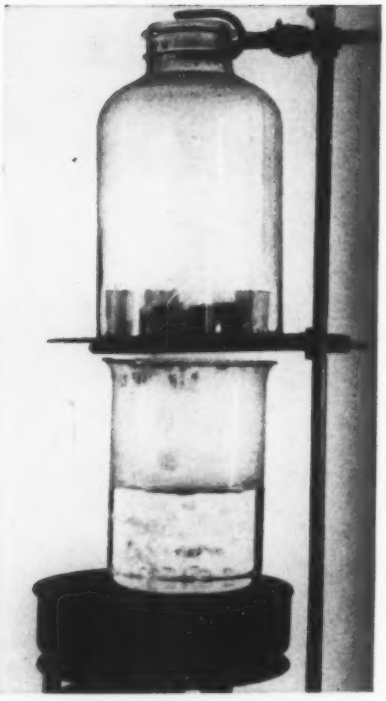

the unmistakable
Ring of Quality
IN AEROSOL VALVES — You will find the clear, unmistakable ring of quality in Sun Tube Aerosol Valves. Quality bonuses, like the stainless steel spring that is double piloted to give smoother action and prevent cocking — the exclusive electronic checks of each individual valve — and the high quality standards that make it possible for Sun Tube Aerosol Valves to maintain the lowest seepage rate in the whole industry. Investigate.
IN COLLAPSIBLE TUBES — For over 30 years, Sun Tube has been synonymous with the best in collapsible tubes. This is because Sun Tube does everything within its own plants, and thus maintains full quality control of all operations from the initial tool manufacture, through metal fabrication and the handsomely decorated finished piece. Investigate.
Sun Tube
CORPORATION
HILLSIDE 5 N. J.
WAVERLY 3-0400

Fiber tear within 5 seconds!

Photo shows how Seban AR-1—carton-sealing adhesive—produces a fast, strong bond. Seban holds, the paper fiber tears. This speed test can be duplicated on actual packaging machinery. Seban grabs in less than 5 seconds, produces a good bond in 12 seconds and tears paper completely within 17 seconds. Choose Seban for fast developed tack, strong bonds.



Seban wins tough sealing tests!



36 minutes in live steam!

This photo shows how Seban AR-5—tube-winding adhesive—resists both heat and moisture in sterilization of paper tubes for surgical products. Steam pouring into bell jar won't produce delamination on tubes sealed with Seban—not even after 36 minutes. Choose Seban for great resistance to heat and moisture!

New line of polyvinyl resin packaging adhesives from Armour

Seban can help you solve your toughest package-sealing problems. Conclusive tests prove Seban meets every packaging need—Cartons—Cases—Window Boxes—Folding Cartons—Tubes—Bags—and more. Seban will help you get increased production and better sealing quality!

Use one of the following machines?

ABC · Dacam	Mor-Can-Pak
Dacamatic	New Jersey
Elliott · Ferguson	Peters
Gar-Pak · Globe	Pneumatic Scale
Hayssen	Post · Potdeven
International	Rockwell · Scandia
Jones · Master	Standard-Knapp
Monitor	Staude

Test the grade of Seban that's right for *your* particular need.

* * *

Don't miss the Seban display in Booth 129—Packaging Machinery and Materials Exposition—Atlantic City, March 25-28, 1958.

ARMOUR ADHESIVE DIVISION

Armour and Company, 1355 W. 31st Street, Chicago 9, Ill.

120 Broadway
New York 5, N. Y.

Delaware and Spring Garden Streets
Philadelphia 23, Pennsylvania

Meta Lane
Lodi, New Jersey

235 South Hamilton Street
High Point, North Carolina

210 pound squeeze!

Revealing photo demonstrates how Seban AR-2—case-sealing adhesive—withstands extreme pressure.* Compression test proves Seban can take almost any amount of palletizing—more than 200 pounds—and hold, even when the case breaks down. Choose Seban when great bonding strength is important.

**Gauge shows lbs. per square inch on cylinder—equal to 1 7 actual compression between plates.*

MAIL THIS COUPON

SEAL WITH SEBAN FOR SUPERIOR SEALING!

MP2-58

Send for:

- ☐ New Seban literature
- ☐ A 5 gal. sample at your quantity price, and data on the grade of Seban best for:
  - ☐ Carton sealing
  - ☐ Folding cartons
  - ☐ Case sealing
  - ☐ Tube winding
  - ☐ Window boxes
  - ☐ Bag sealing

Armour Adhesive Division
1355 West 31st Street • Chicago 9, Illinois

NAME_____

POSITION_____

FIRM_____

CITY_____ STATE_____

Our customers demand all kinds of packaging service . . . and get it!

They're entitled to it. For service is a highly important ingredient of the packaging producer's job — keeping the supply of packaging materials rolling into the customers' plants with never a holdup.

And when there's an emergency . . . they know they can depend on us to come through in the clutch. We're ready, willing, *and able* to exert that extra effort to help our customers out of a hole. Because the *four* modernly equipped Oneida plants have *strategic location* to serve the nation.

Equally important in the packaging picture — imaginative, hard-selling design . . . meticulous manufacture . . . scientific research . . . quality flexible materials . . . masterly printing on 6-color flexographic and rotogravure presses.

When can we get together for a talk about *your* packaging problems?

Oneida PAPER PRODUCTS, INC.

10 Clifton Blvd., Clifton, N. J.

Los Angeles, Cal. • Baltimore, Md. • Centralia, Ill. • Sales Offices In Principal Cities

CONVERTERS AND COLOR PRINTERS OF QUALITY PACKAGING from: Glassine, Cellophane, Polyethylene, Vinyls, Parchment, Sulphite, Foil, Kraft, Waxed, Coated and Laminated Materials

The beginning of a new era in container development!

CANCO ALUMINUM CANS...

now in mass production!

As you read this page, American Can Company's Hudson Plant is in commercial production of aluminum motor oil cans. In cooperation with Reynolds Metals Company, Esso Standard Oil Company will use these quart-size containers to market the famous Esso brands of motor oil. Soon Canco aluminum cans will be in daily use in thousands of Esso dealer service stations.

Before this first large-scale order became a reality, Canco devoted many years of research to the special problems involved in handling, fabricating and lithographing aluminum. Now, with each day of actual production, Canco's Aluminum Division is perfecting the techniques that will make these lightweight, corrosion-free cans practical for a wide variety of other products!

American CANCO **Can Company**

FIRST TIME EVER!

clopane non-blocking vinyl tubing!

(1 TO 60 INCHES WIDE)

OPENS TO THE TOUCH!

solves "problem child" packaging of items such as:

- linoleum rolls
- window shades
- rugs
- fishing rods
- curtain rods
- baseball bats etc.

Now, for the first time, famous **clopane** vinyl is available in *non-blocking* tubing! A revolutionary application for products heretofore "too long, too narrow" for packaging by plastic!

This non-blocking vinyl tubing offers endless, seamless rolls in one to 60-inch widths layflat . . . with all the popular **clopane** characteristics:

- sparkling clear
- moisture resistant
- tough
- resistant to oils & greases
- long shelf life
- reduced static electricity

plus . . . REUSEABILITY!*

Ask for FREE SAMPLES now! See how **clopane** non-blocking vinyl tubing makes your problem-child packaging "behave".

*Convenient reuseability of **clopane** non-blocking vinyl tubing opens a new field of promotion. Package tubing for a window shade, for example, is ideal as protective container for fishing rod, curtain rods, etc.*

things look better far longer in

clopane®

sparkling clear film

For details, write, wire, or phone
Plastic Film Division • Clopay Corporation
Clopay Square, Cincinnati 14, Ohio

clopane is the lowest cost, crystal-clear, lightweight, extruded vinyl film.
For still lower cost packaging investigate Clopay's polyethylene films today!

Clopay Corporation, Dept. 205
Plastic Film Division • Clopay Square, Cincinnati 14, Ohio
Gentlemen:
Please send me FREE copy of "**clopane** Facts", and FREE samples.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

COPYRIGHT 1958 CLOPAY CORPORATION, CLOPAY SQUARE CINCINNATI 14 OHIO

To woo the millions, a package designer
combines technical skill, art, salesmanship,
psychology....and an understanding
of everyday people.

Every customer is beautiful

It's easy to become involved with markets at the expense of people.

Orders come from human beings. Not statistics. Nor glamorized stereotypes. Individuals. With their own special qualities, some of which just won't fit into neat classifications.

Every good salesman knows this. It is why selling, scientific though the approach may be, is still an art.

Packaging for sales, without taking away from its scientific techniques, is an art, too. The designer of a successful package is technician, salesman, artist . . . and, above all, someone who knows people and what makes them tick.

Keep the spotlight on the package . . . not the designer

Probably you couldn't pick your customers out of a crowd. Neither could you spot package designers. They are good designers for you not because they are male or female, veteran or youth, self-made or Ivy League, "artistic" or penny-conscious . . . but because they have that perceptive combination of talents that enables them to make your package move people to favorable action.

We'd be happy to have you meet our designers. Happier, to have you examine the packages they have created. Happiest, to have you talk to the Lassiter clients whose packaging awareness is reflected in their sales increases.

Starting point

We have an interesting item: a Package Evaluator that really works when you play the game fairly. It's even been known to suggest new packaging perspectives. Send for it.

LASSITER CORPORATION
350 FIFTH AVENUE • NEW YORK 1, N.Y.

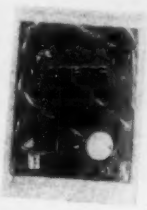
EXECUTIVE OFFICES: Charlotte, N. C.
DIVISIONS: Atlanta, Ga. • Chicago, Ill. • Cheltenham, Pa. • Greensboro, N. C. • Danville, Va.

Designers and Manufacturers of Packaging in:
Cellophane • Polyethylene • Acetate • Paperboard
Mylar • Foil • Laminations • Vitafilm • Paper

Persuasive Packaging

Supers move packaged freezer, refrigerator bags

Key to chain buyers' acceptance of plastic freezer and refrigerator bags by Arctic Products Co. (N. Y. C.) is the packaging. Combination cellophane-polyethylene film takes rough handling in stride; five-color flexographic printing draws the shoppers to the merchandise. Design and printing by Lassiter.



Package is also a production time-saver: automatic packing is combined with hole punching (for hanger-type displays), halves previous hand-packing time.

Test Mylar® hosiery package

New hosiery bag for Fruit of the Loom nylons is currently being tested by Diamond Mills, New York. Made of ½-mil heat-sealable Mylar, the bag allows glass-clear view of the well protected hosiery. Lassiter points to steadily dwindling cost differential between Mylar and other films . . . offers to cooperate on production tests with packagers.

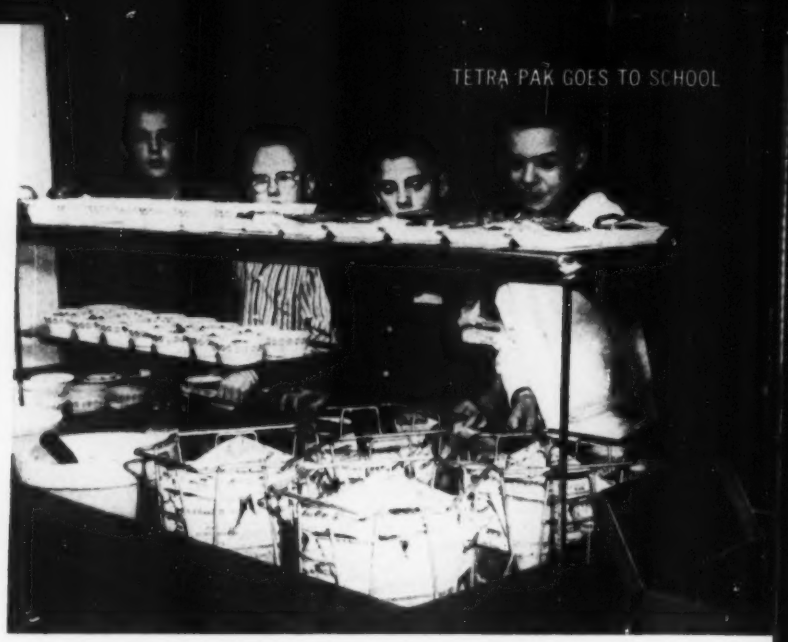
"Superman" successful cookie salesman

Lassiter's "Superman" franchise package is paying off for another regional food processor, this time a baker. Perfect Foods, Inc., Lansdale, Pa., reports good reception for its Superman Cookies.

"Superman" is available to food, produce and soft goods packagers on an exclusive territorial basis. The multi-color package can be adapted in size, design and type of package to meet individual needs.

Contact your Lassiter representative for details and case histories.

ENTHUSIASTIC PRINCIPAL, Hugh Thompson, explains how Tetra Pak saved full time labor of one person in school cafeteria.



AT PERRY TOWNSHIP Junior High, students pile half pint Tetra Paks on trays. Once shown how to open at notched corner, they accepted new milk container immediately, now prefer it to other containers.

G. L. McFARLAND JR., Manager of Golden Guernsey Farms, Inc., stands beside roll of Tetra Pak paper. His dairy currently supplies 40,000 Tetra Pak units weekly to 12 schools in the Indianapolis area.

TETRA PAK SCORES IN INDIANAPOLIS

Golden Guernsey Farms Inc. installed the first Tetra Pak machine in the Indianapolis area. Manager G. L. McFarland Jr. was impressed with its hefty cost-cutting features. The only question: "Will my customers like it?" He then persuaded principal Hugh Thompson to try the pyramid-shaped carton in his junior high school. The results: outstanding success with the students. Cafeteria manager Estella Lynn, dubious at first, became an ardent convert because Tetra Pak eliminated most handling and insured easy disposal.

Success, too, in the dairy: less down time, plus big savings in material, labor and storage space. This success story has been repeated in a dozen schools in the Indianapolis area.

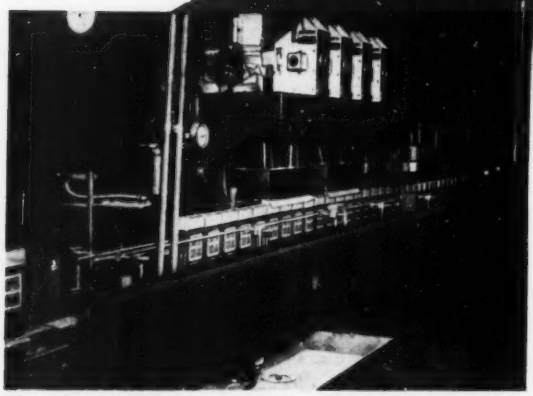
Let an expert from Crown Zellerbach (manufacturer of Tetra Pak paper) show *you* the Tetra Pak way to production economies. Write Department TK-2 at below address for complete details.

CROWN ZELLERBACH CORPORATION
343 SANSOME STREET, SAN FRANCISCO, CALIFORNIA

TYPICAL STUDENT, David Miller, finds new container easy to hold, easy to carry on crowded tray.

HORACE MALLORY handles complete operation. Machine forms, fills, packs 75 units per minute.

FULLY-PACKAGED by Pneumatic



View of packaging line at Chicago plant of ECONOMICS LABORATORY, INC. Cartons are formed, bottom sealed and automatically filled on these Pneumatic machines.

SOILAX lives brilliantly up to its maker's claim that "a little does a lot". And, just as efficient as the product itself is the method of packaging it, used by ECONOMICS LABORATORY, Inc. in their Chicago plant.

Pneumatic's remarkable, newly developed PNEUMATRON machine does the weighing and filling part of the job with speed and fractional ounce accuracy . . . using a revolutionary, instantaneous "air jet" pressure principle.

SOILAX, like FINISH & ELECTRASOL for electric dishwashers and the many other fine products of this company, is packaged in cartons which are also formed, bottom sealed and top closed on Pneumatic's machines.

Pneumatic's advanced design and precision construction pays off handsomely in "lower cost per container" operation . . . a fact that America's leading producers of packaged and bottled products have learned through experience. They use their knowledge, to their individual advantage and profit, by standardizing, in large part, on Pneumatic machines. Bear that in mind, when you need equipment of this type.

PNEUMATIC SCALE CORP., LTD., 82 Newport Ave., Quincy 71, Mass. *Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England. Canadian Division: Delamere & Williams Company, Ltd., Toronto.*

★ PNEUMATIC

Packaging and Bottling Equipment

These polyethylene-lined bags have solved our own special packaging problems. Bag on left keeps our ammonium nitrate free of moisture. Bag on right keeps our polyethylene resins free of contaminants.

These Bags Are So Moisture-proof We Use Millions, Ourselves, Every Year:

We not only make and recommend polyethylene to line bags, but we use these bags to protect our own products . . .

Do we take our own medicine? Yes, millions of times a year! You see, at Spencer Chemical Company we produce "Poly-Eth" Polyethylene and recommend it for coating multiwall kraft bags. And every year we use millions of these polyethylene-lined bags, ourselves, to ship our own brands of ammonium nitrate fertilizer and polyethylene resins.

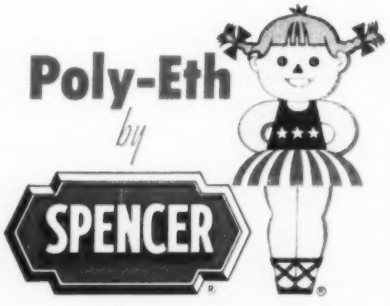
These low-cost bags keep our ammonium nitrate bone-dry and free flowing. They keep our "Poly-Eth" hospital-clean, free of contaminants.

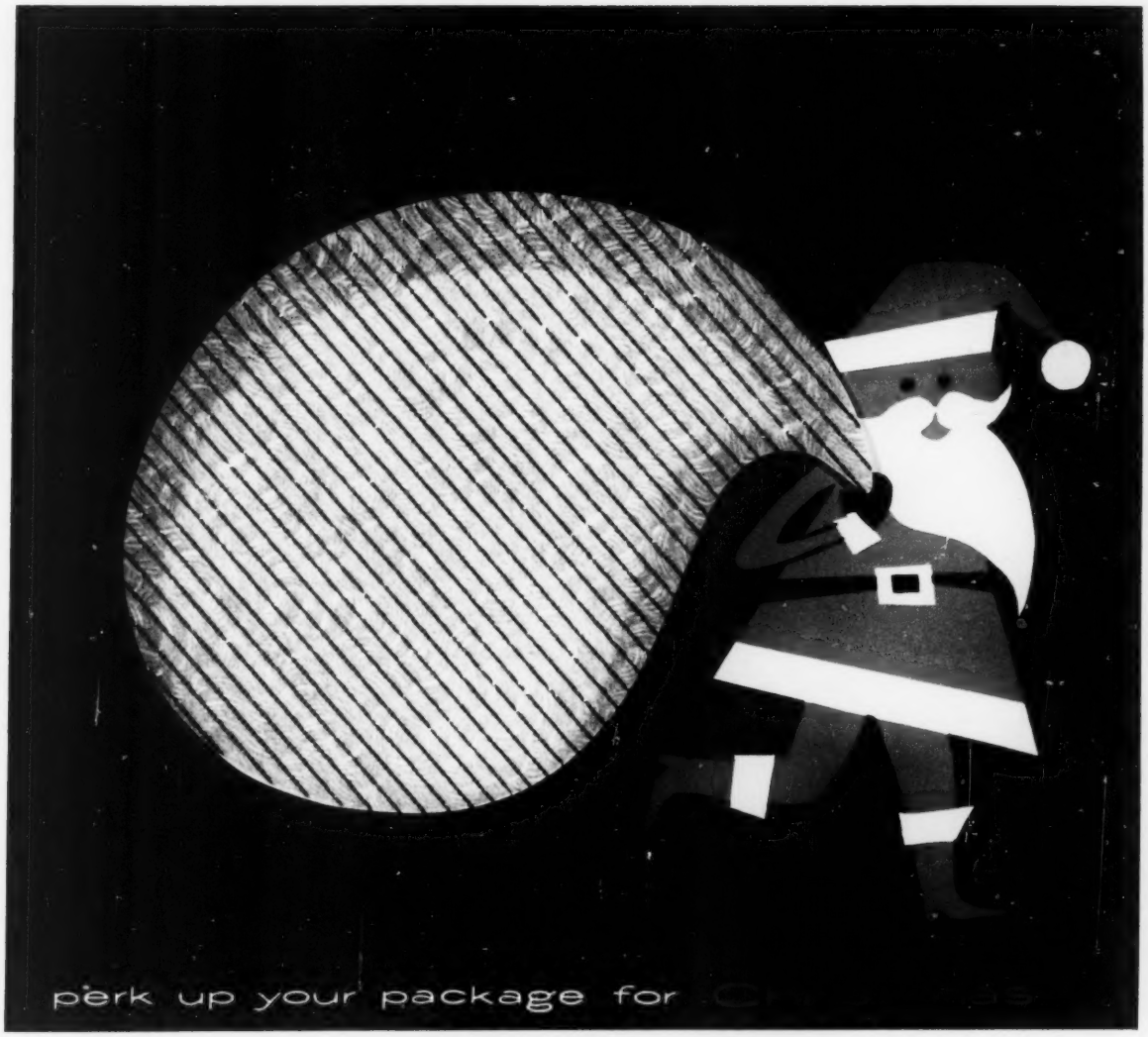
Important benefits are offered, both to package users and package makers, by a special Spencer coating resin ("Poly-Eth" 2007). This high-gloss, non-toxic resin will draw down to a 7-pound coating per ream. Also, "Poly-Eth" 2007 exhibits minimum "neck-in" of the extruded web. This means reduced material losses because only minimum trimming of the coated edges is necessary. You'll find, too, that 2007 is easy to process and can help increase your take-off rate.

In all sorts of packaging "Poly-Eth" 2007 has countless applications, since it can be used to coat kraft, cellophane, foil, cloth and Mylar. In addition, it can be used for disposable diapers, waterproof bags and protective liners.

Physical properties of "Poly-Eth" 2007 include a melt index of 8 and a density of .916. "Poly-Eth" 2206 gives you the same basic properties of 2007 with a melt index of 4, and a density of .918.

To learn how these two "Poly-Eth" coating resins can help give you better coated packages, write: Spencer Chemical Company, Dwight Building, Kansas City 5, Mo.





with facil-fab®

and pick up NEW profits!

Only 170 more working days until your Christmas shipping deadline!
Only 85 planning days remain. Plan Now to include "FACIL-FAB" in your Christmas packaging.
"FACIL-FAB", the fabulous backed satin fabric, has no rival for ease of handling, outstanding beauty and sales appeal.
Let our staffs work with your art and sales promotion directors to create an exclusive and dramatic setting for your product.
The time to act is now. Christmas sales are nearer than you think!

For complete details call, wire or write:

FACILE CORPORATION

Paterson 4, New Jersey · Mulberry 4-1000

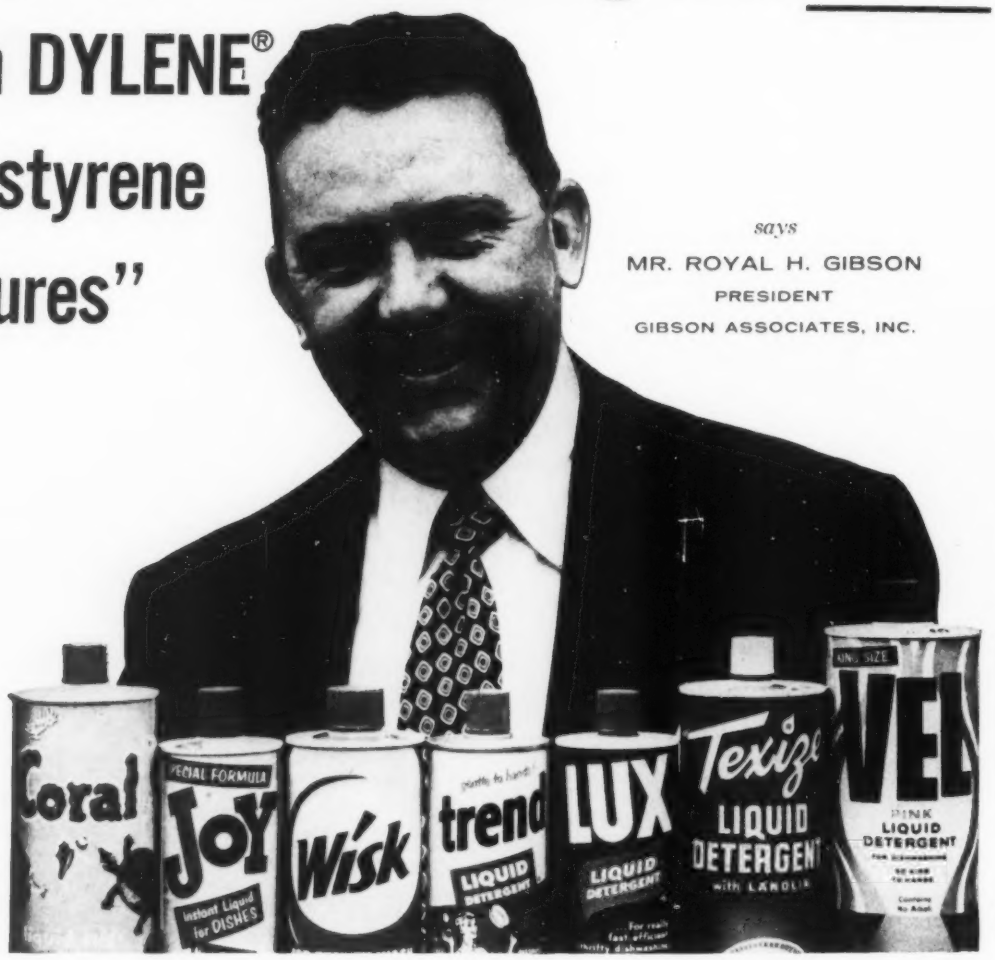
"FACIL-FAB" may be used for:

- DELUXE FOLDING BOXES
- SET-UP BOXWRAPS AND LABELS
- GIFT WRAPS
- DECORATIVE DISPLAYS
- ENGINEERED FOR AUTOMATIC AND HAND OPERATIONS

When you package with "FACIL-FAB" your package keeps company with this list of fine products:

Prince Matchabelli • Hattie Carnegie • Helena Rubinstein • Lentheric Perfumes • Elizabeth Arden Toiletries • Jacqueline Cochrane Toiletries
John Robert Powers Cosmetics • Lady Sunbeam Razors • Lady Schick Razors • Schiaparelli Stockings • Cannon Mills • Waterman Fountain Pens
Schrafft's Candy • Calvert's Reserve • Seagram's V.O. and many, many more

"We cut our manufacturing time in half with DYLENE® polystyrene closures"



says

MR. ROYAL H. GIBSON
PRESIDENT
GIBSON ASSOCIATES, INC.

IN FOUR SHORT YEARS, we've seen polystyrene closures invade the field of liquid detergents, waxes, foams and soaps. In the case of Gibson Associates, they have produced over 500 million units in 60 different styles.

The President, Mr. Gibson, says: "We spotted the advantages of the polystyrene closure and polyethylene nozzle in our first design. Our findings showed that polystyrene has a high impact resistance, it doesn't react chemically with any of the new liquid detergents, and it can be used in a more efficient and economical molding technique. With a polyethylene nozzle, the polystyrene cap forms a perfect seal . . . *without the use of gasket material.*

"Our use of DYLENE in a single color alone has exceeded 2 million pounds. Uniformity of color is one of our most important needs. Here we have enjoyed good service! We simply specify the color, send a sample to Koppers' color laboratory, and they make it up."

This is just another example of the type of service offered by Koppers . . . makers of fine plastics for fine products. Koppers also produces DYLITE® expandable polystyrene, DYLAN® polyethylene and SUPER DYLAN® polyethylene. For more information on any of these four plastics, write to Koppers Company, Inc., Chemical Division, Dept. MP-28, Pittsburgh 19, Pa.

KOPPERS

KOPPERS PLASTICS

Offices in Principal Cities • In Canada: Dominion Anilines and Chemicals Ltd., Toronto, Ontario

Background for packaging

Notes, quotes and comments

Look to history for reassurance as to the current business slowdown. Similar slowdowns occurred in 1948-49 and 1953-54. Nervous Nellies late in 1948 stopped buying and inventories declined, but consumers refused to panic and by the end of 1949 business was back on an even keel. Late in 1953, when storm signals again appeared, there was less apprehension than before, with the result that the dip was even slighter. This is the third time around and it is apparent already that both industry and consumers are keeping calm. Business activity can never be a straight line, but it does appear to be getting closer to that goal.

Good news for packaging suppliers is the forecast that the food-processing industry—their largest customer—has a record year ahead in 1958, come Sputnik or slowdown. National Food Brokers Assn. sees total '58 food and grocery sales volume at $79 billion, as against the record $75 billion of last year; Dept. of Commerce agrees. Wall Street commentators point to food processing as a '58 growth industry and predict a continued, profitable trend to new convenience foods—which means new packages.

Further evidence of changed attitudes toward business cycles is the present stability of advertising budgets. Years ago any slowdown or faltering in sales brought an immediate slash in advertising—a quick, convenient, but shortsighted economy. *Printers' Ink* finds no evidence that this is happening today; on the contrary, in those industries which are successful in meeting their sales problems, advertising generally is being increased.

Watch for further news about tear tapes for polyethylene-film packages, now that Carnation has demonstrated the effectiveness of a laminated pouch. (See "A Tape That Tears Polyethylene," p. 94, this issue.) Two ways of incorporating similar tear strings in straight polyethylene film have been developed experimentally. In one case, the string is heat sealed to the surface of the completed film; in the other, the string is imbedded right in the film while it is still molten after extrusion. In either case, a preferential tear line is established.

Rumors fly about intriguing new aerosol applications nearing the market, now that loaders have broken away from the spray principle and are able to expel in non-aerated streams and drops as well. Several big brands are testing push-bu' on toothpaste, dispensed in a stream; Colgate is currently on sale in the East. Similarly, a large food processor will have chocolate syrup in a stream dispenser and another food processor is readying a liquid coffee so concentrated that it is dispensed into the cup by the drop.

Significant victory for national vs. private brands is implicit in Safeway Stores' brilliant last fiscal year under new management, which resulted in sales of close to $2 billion, up 3%, and a profit increase of 86.6%. Most notable change in marketing strategy made by new president, *Robert A. Magowan*, was to cut number of private-brand canned-goods labels from 40 to six, while slashing private-brand advertising almost in half. Safeway has also quit fighting trading stamps, milk-price supports and manufacturers' advertising allowances.

Housewives may be bewitched by today's packaging, but they are also bothered and bewildered by difficult opening, packages that topple over, misleading illustrations and confusing product identity. That was the consumers' indictment delivered to the recent National Food Packaging Symposium in Chicago by *Mrs. William Bell*, a TV commentator known as *Miss Lee Phillip*. She cited a frozen-fish [*Continued on page 36*]

package colorfully illustrated with breaded fish portions on the cover, which she bought thinking she would only have to thaw it or put it in the frying pan. It turned out that the fish was not frozen breaded fish at all, but merely frozen fish. Lost: one customer.

Value of packaging in a single industry is highlighted by report of United States Brewers Foundation showing that of $1 billion spent by brewers in 1957 for supplies and services, $350 million went for cans and bottles. This figure split into $290 million for cans and $60 million for bottles. It was second biggest expense item, second only to $468 million for wages.

Millions are lost in point-of-sale display materials that super-stores can't or won't use, says *Super Market Merchandising* after a survey of 2,045 stores, and the No. 1 reason is improper design. The average supermarket accepts only five or six major promotions a year, out of as many as 40 offered, and turns down 90% of the hundreds of spot promotions offered. *Particularly timely for packagers, in view of these findings, is* MODERN PACKAGING's *lead article, "The Strategy of Display," starting on p. 87 of this issue.*

Background for packaging

Reversal upward of can production is predicted for 1958 by American Can Co. Forecasting for the entire industry, the company estimates can output this year in the U. S., calculated on the basis of an average No. 2 can, at between 41.5 and 42 billion units, compared with 40.2 billion in 1957, which was 4% under record 1956 due to poor fruit and vegetable crops.

No indication of any general weakening of prices in the packaging-supply field should be read into recent cuts in certain special grades of cellophane. The industry-wide reduction of 4 cents a pound affects only grades used primarily in supermarkets for pre-packaging and is believed forced by increasing competition from lower-priced polyethylene, on the one hand (see "What About Polyethylene?" series, Dec., Jan., and p. 116 this issue), and the industry's own up-and-coming polymer-coated cellophanes on the other. But cellophane price weakness may spread further.

[*Continued from page 35*]

Ingenious machine that staples lipsticks and similar objects to a display card automatically with short strips of pressure-sensitive tape has been developed by Minnesota Mining & Mfg. Co. It does a job impossible to do by hand and solves multiple problems in the handling and merchandising of small, hard-to-identify items. Machine has been adopted by one of the largest producers of lipsticks, which refuses to permit a story for fear its competitors might find out. As if they didn't know!

Competitive battle between tin and glass in the baby-food industry is behind the $51-million restraint-of-trade suit slapped on Beech-Nut Life Savers, Inc., by Gerber Products. Beech-Nut is accused of giving rebates and special ad allowances in California to force Gerber off the shelves. The suit refers to an "unfounded and totally erroneous belief" that glass jars (which Beech Nut uses exclusively for baby foods) are in some way preferable from the standpoint of preservation and sanitation. Gerber uses metal containers west of the Mississippi and glass packages in the East.

Tips to canners from *Val Bauman*, vice president of National Tea Co.: Why ignore the can top as advertising medium? The shopper looking down at the lowest two shelves in a supermarket does not see the side label as readily as the top, which could also be lithographed for strong identity. And why not pay more attention to self-stacking nesting cans, which are a great boon to housewives as well as to the retailer?

don't say paperboard ...say KRAFIBRE®

THROUGH 40 years' experience, we have developed a paperboard which we believe is superior to any similar product on the market. We call it Krafibre. KRAFIBRE is strong, lightweight, economical. It is adaptable to any treatment, prints beautifully and keeps its "just-printed" freshness at the point of purchase. WE'D like to send you the new Krafibre sample book so you can see what we mean. It contains Krafibre in natural, white lined and a rainbow of colors — and shows how it takes printing. DROP US A LINE and we'll put your copy in the mail.

40 Years of Progress

COLUMBIA

BOX BOARD MILLS, INC.

CHATHAM, N. Y.

COLUMBIA 40

Packaging Problem? Here's how Patterson Frozen Foods solved theirs!

"We used self-sealing PRESSEAL cartons," said Mario Ielmini, president of Patterson Frozen Foods. "Some of our frozen foods packages could not be handled by mechanical equipment. A comprehensive cost survey in our plant of taping, stapling, and similar methods proved PRESSEAL as the economical solution to a problem no other packaging technique could solve."

You, too, can solve your packaging problems with easy-to-use self-sealing PRESSEAL cartons which completely eliminate taping, gluing, stapling, and other sealing equipment. Factory treated PRESSEAL carton flaps adhere together with the pat of a hand, but these same flaps will not stick to other surfaces. PRESSEAL slashes labor costs, saves time, speeds production, requires no auxiliary material or equipment. Sturdy PRESSEAL cartons withstand rough usage and prolonged storage.

PRESSEAL can be used with an infinitely wide variety of products including: floor tiling • medical supplies • clothing • toys • stationary supplies • industrial parts • paint • tools • candy • packaged foods • and many others

If you're packing in corrugated cartons, you'll be packing better with PRESSEAL!

For Information on

PRESSEAL®

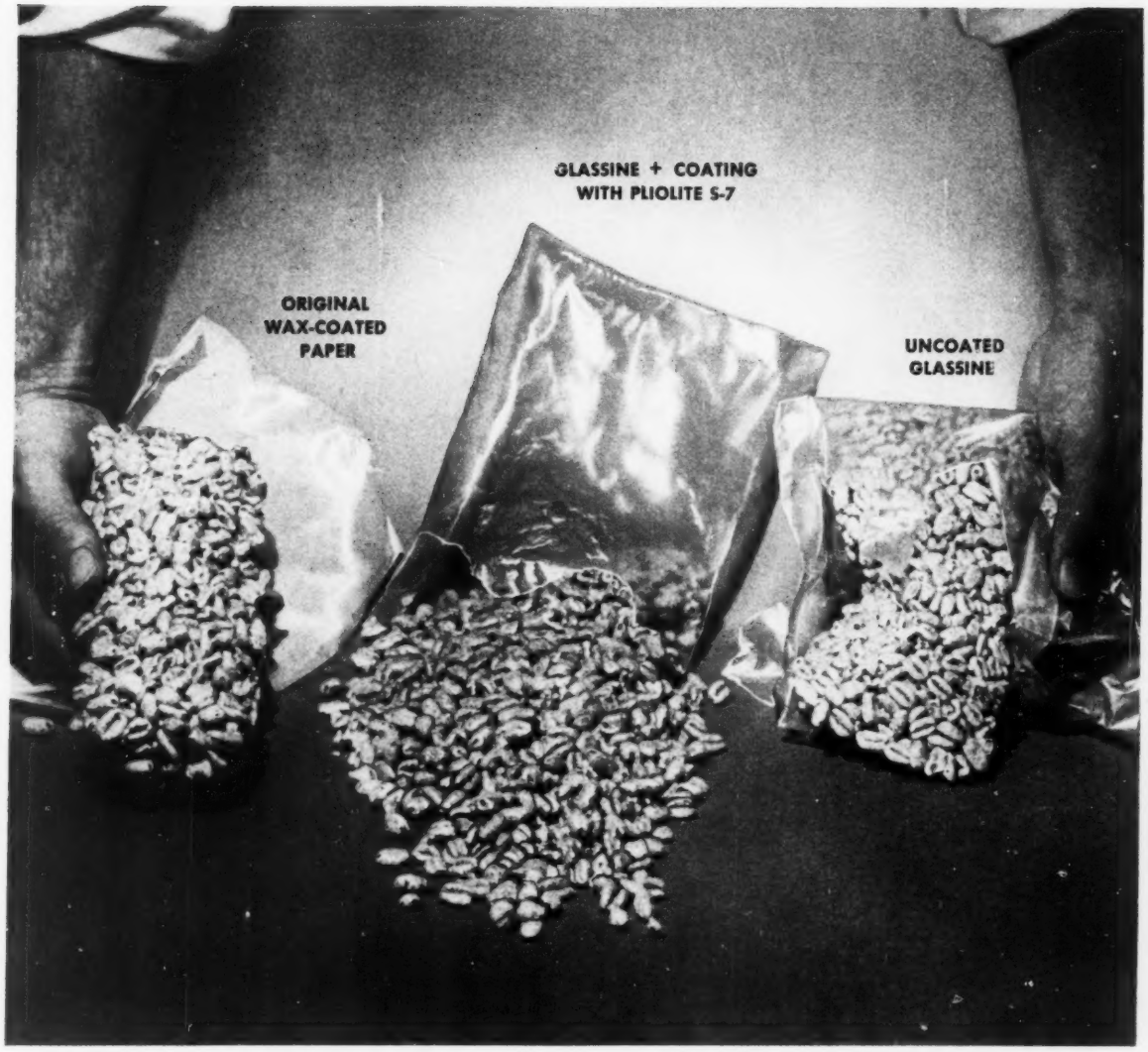
PATENTS PENDING

Write to

GROWERS CONTAINER CORPORATION

PLANTS IN SALINAS AND FULLERTON, CALIFORNIA AND JACKSONVILLE, FLORIDA

HEADQUARTERS in SALINAS, CALIFORNIA
SALES OFFICES — CALIFORNIA: Salinas, Fullerton, San Francisco, San Jose, Santa Rosa, El Centro, Fresno • FLORIDA: Jacksonville, Tampa, Miami Springs, Orlando • ARIZONA: Phoenix • LOUISIANA: New Orleans • GEORGIA: Atlanta ILLINOIS: Chicago • ALABAMA: Birmingham • SOUTH CAROLINA: Greenville



Here's super moisture-resistance—clear and simple!

The test on sugar-coated cereal shown above proves it: Coatings like this one based on PLIOLITE S-7 clearly provide glassine and other papers with excellent resistance to the passage of moisture—as much as four times that offered by some other resins.

But there's much more to the PLIOLITE S-7 story. It also provides tearing heat-seals, excellent crease-resistance, unusual anchorage, good slip, superior aging, high gloss and exceptional clarity—simply and economically. PLIOLITE S-7 is supplied as a 30% solution in an aromatic solvent, specifically designed for high quality paper coatings. It is readily modified with waxes, resins or liquid plasticizers to meet particular requirements. And it is easily applied on standard equipment. For full details, including the latest *Tech Book Bulletins*, write to Goodyear, Chemical Division, Akron 16, Ohio.

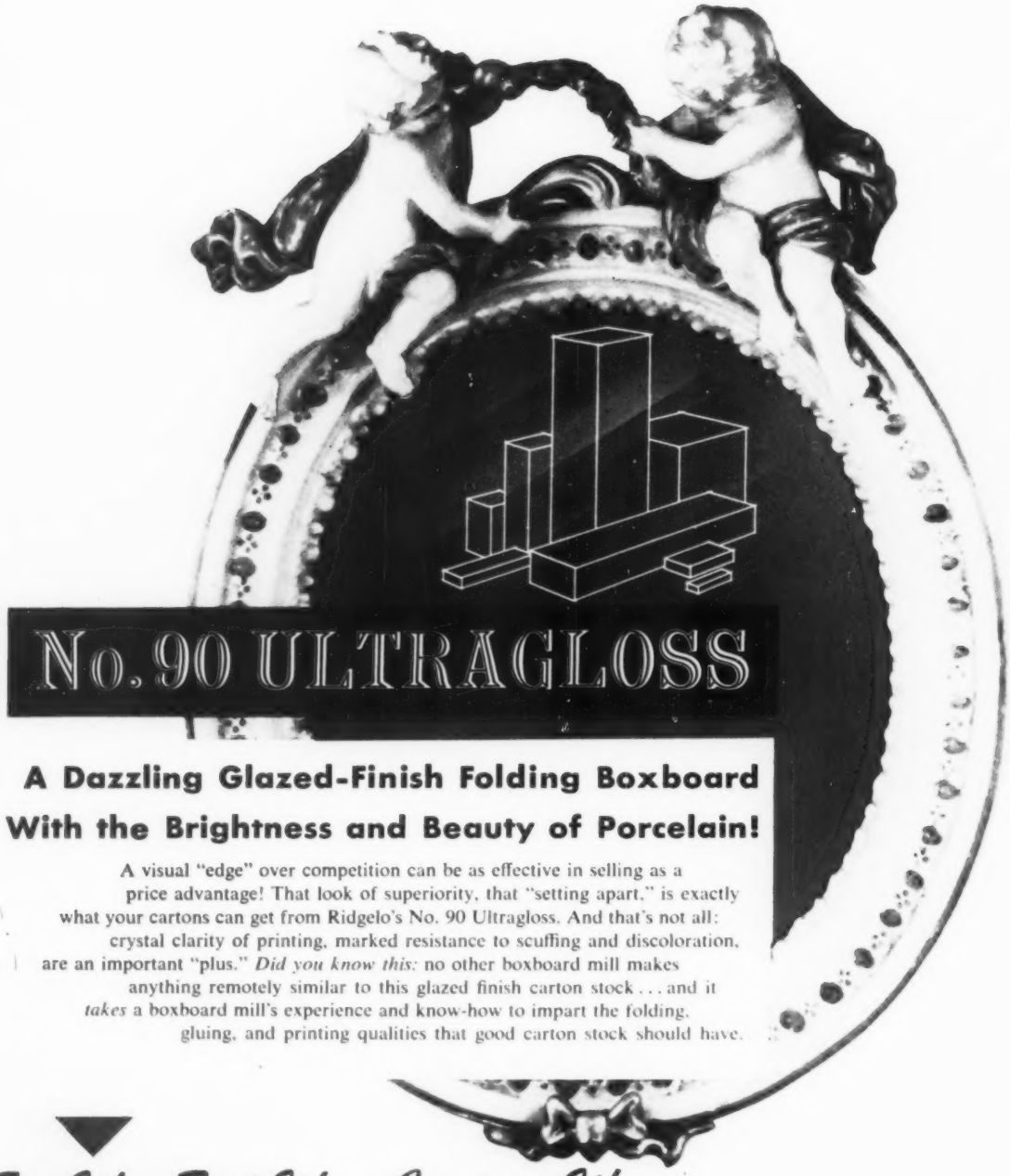
GOODYEAR

60th GOODYEAR ANNIVERSARY

CHEMICAL DIVISION

CHEMIGUM • PLIOFLEX • PLIOLITE • PLIOVIC • WING-CHEMICALS

Chemigum, Pliofiex, Pliolite, Pliovic–T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio



No. 90 ULTRAGLOSS

A Dazzling Glazed-Finish Folding Boxboard With the Brightness and Beauty of Porcelain!

A visual "edge" over competition can be as effective in selling as a price advantage! That look of superiority, that "setting apart," is exactly what your cartons can get from Ridgelo's No. 90 Ultragloss. And that's not all: crystal clarity of printing, marked resistance to scuffing and discoloration, are an important "plus." *Did you know this:* no other boxboard mill makes anything remotely similar to this glazed finish carton stock . . . and it *takes* a boxboard mill's experience and know-how to impart the folding, gluing, and printing qualities that good carton stock should have.

See It!...Test It!... Compare It!

Ridgelo
CLAY COATED
REG. U.S. PAT. OFF.
BOXBOARDS

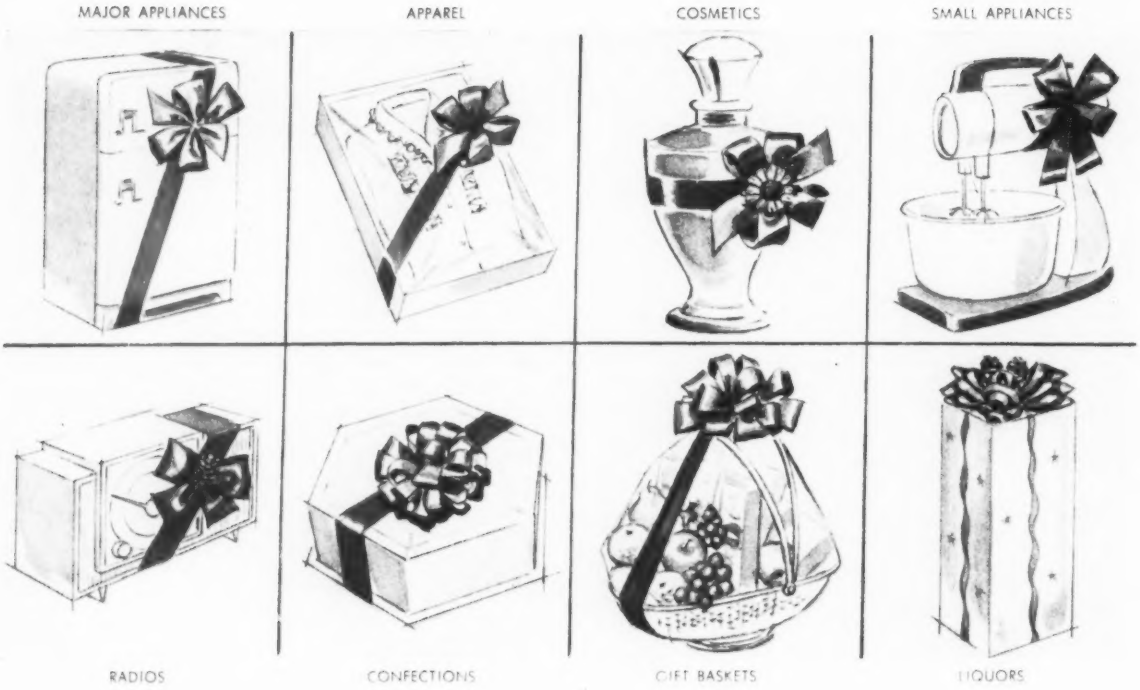
+ plus
A CUSTOM COATING SERVICE FOR PACKAGERS

Write or phone for free samples. We'll send you cartons, or press sheets, or both. You be the judge...No. 90 Ultragloss is unique!

LOWE PAPER COMPANY • Ridgefield, N. J.
An Independent Mill—Serving Industry Since 1906

Representatives • **Detroit**–Joseph P. Giroux • **Los Angeles** Norman A. Buist • **Philadelphia** Philip Rudolph & Son, Inc. • **St. Louis** A. E. Kellogg

The direct results...
of continuing package research are...
Better product merchandising for increased sales
Better product handling for lower costs
SEFTON FIBRE CAN CO.
St. Louis • New Orleans • Portland, Oregon • Piqua, Ohio
Jeffersonville, Ind. • Oakland, Calif.



Dress Up Your Product . . . Package as a Gift

Increase Your Sales with . . .

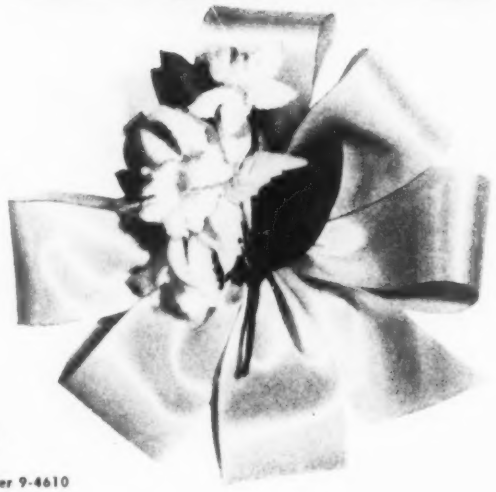
SHEAR-PRINZ BOWS

Eye-appeal sells merchandise fast. And the fastest, easiest way to give your product eye-appeal is with a bright, beautiful Shear-Prinz bow.

These gorgeous bows designed especially for your product . . . for every gift-giving event . . . for every holiday pack . . . for that important special promotion . . . are sure to attract customers' attention. Dealers' enthusiasm, too, is immediately reflected in your increased sales.

Shear-Prinz bows are available in a great variety of styles in small, medium or giant sizes. All come pre-tied, ready for quick, easy application. Designs you choose are yours exclusively.

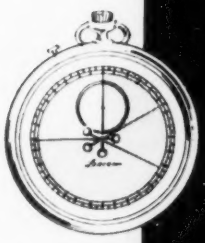
Find out how Shear-Prinz bows are being used for special displays, for dealer-selling aids, and for hundreds of other applications.
Write, wire or phone for complete information



SHEAR-PRINZ ASSOCIATES

Packaging Division., Dept. MP-2 • 216 S. Wabash Ave., Chicago 4, Ill. • WEbster 9-4610

NEW!
REYNOLON
TRADE MARK
water-soluble
FILM



- **Fully transparent**
- **Heat sealable**
- **Strong**
- **Gas impermeable**

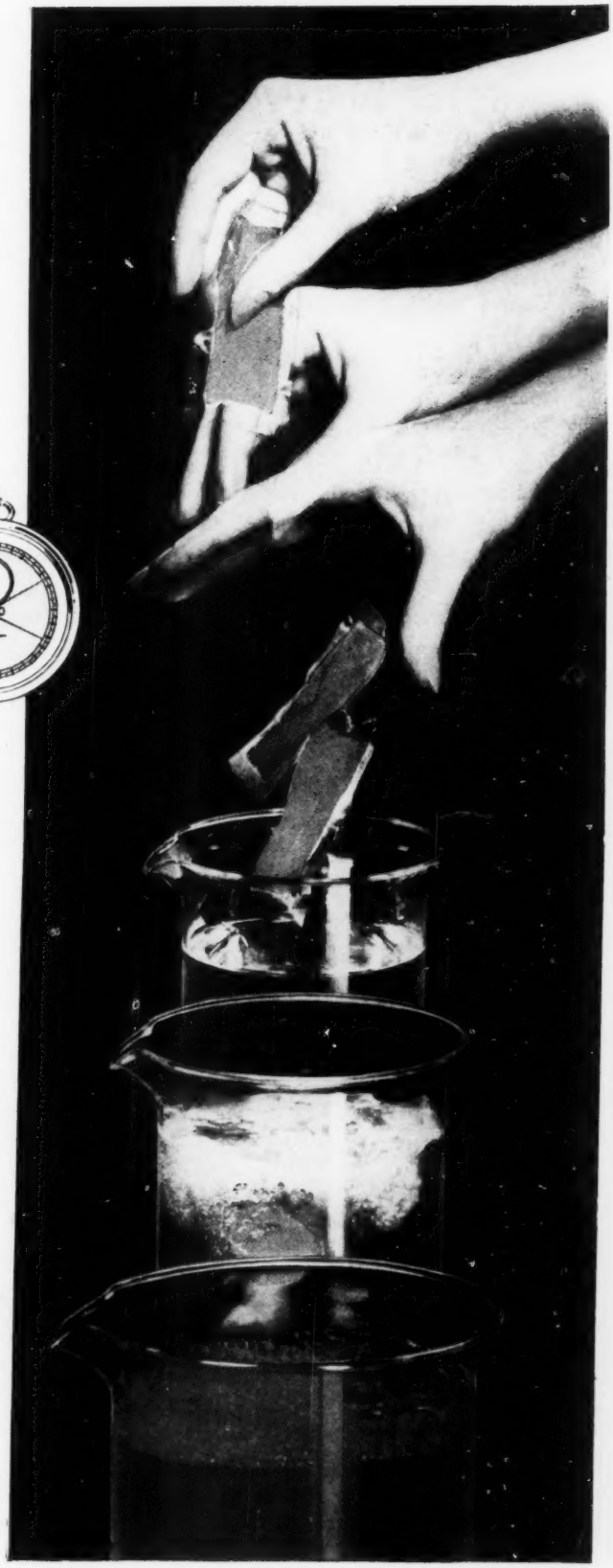
New Reynolon polyvinyl alcohol film is completely soluble in water... ideal for packaging solids, liquids, powders.

Investigate this intriguing new packaging material. Consider its exciting potential for packaging detergents, fertilizers, toilet cleansers, household or industrial dyes, whiting agents, bleaches—or for other applications your own ingenuity may devise. Reynolon Water Soluble Films are individually tailored to the exacting requirements of each specific application.
We will welcome the opportunity of working on applications of major interest to you.
For details, simply call the plastics engineer in the Reynolds office in New York, Camden, Detroit, Chicago, St. Louis or Los Angeles. Or write Plastics Division, Reynolds Metals Company, 30 Boulevard Avenue, Grottoes, Virginia.

Note:
A new Reynolon cast polyvinyl chloride film is also available for skin packaging jewelry, hardware, toys, novelties, for protective wrap on textile products and a variety of other products. Write for details.

PLASTICS DIVISION
REYNOLDS METALS COMPANY

Watch Reynolds All-Family Television Program, "DISNEYLAND," ABC-TV



THE NEW CLEVELAND
PLASTIC CLOSURES
lock in Sift, Pour and Closed Positions

Made of high grade polyethylene plastic . . . these new Cleveland Container closures "snap lock" in sift, pour and closed positions. Their attractiveness will definitely call attention to your products.

Self cleaning, as turned from one position to another, prevents build-up of contents of the can between top and closure. Their "kind to the fingers" turning action will win consumer acceptance.

The larger size is ideal for packaging flour, baking powder, bread crumbs and similar products . . . smaller size for spices, herbs, medicinal powders, etc. Available in colors at small additional cost.

Let our design engineers work with you in adapting these new closures to your products. Just call or write our nearest plant.

VARIETY AND VERSATILITY

Illustrated at the left are two variations in the use of the plastic closure. One shows the closure in modified form used with an all metal spice can. Closure is furnished where large quantities apply.

The round container of fibre body construction shows the same plastic closure for the top and a friction plug for the bottom. This permits easy filling for smaller quantities.

Closure permits use of spoon for measuring and, of course, is used with tamperproof undertop.

Why pay more? For quality products . . . call CLEVELAND!

WRITE for your copy of our latest Packaging Brochure.

THE CLEVELAND CONTAINER COMPANY
6201 BARBERTON AVE., CLEVELAND 2, OHIO

PLANTS AND SALES OFFICES: CLEVELAND, DETROIT, CHICAGO, MEMPHIS, LOS ANGELES, PLYMOUTH, WIS., JAMESBURG, N. J., OGDENSBURG, N.Y. • ABRASIVE DIVISION CLEVELAND

SALES OFFICES: NEW YORK CITY, WASHINGTON, D. C., ROCHESTER, N. Y., WEST HARTFORD, CONN.

• ALL-FIBRE CANS • COMBINATION METAL AND PAPER CANS • SPIRALLY WOUND TUBES AND CORES FOR ALL PURPOSES

CLEVELAND CONTAINER CANADA, LTD.
Plants & Sales Offices: TORONTO AND PRESCOTT, ONT.
Sales Office: MONTREAL

cut these pieces out of your packaging picture

and SAVE!

INTERESTED IN SAVING MONEY AND PACKAGING ATTRACTIVELY?

We admit this is an unnecessary question because **everybody** is! But the Roto-Wrap Model 'B' actually does just that! It forms a film, foil or heat-seal coated paper package around your product in one completely automatic operation thereby **eliminating the following costs:**

1 — The purchase of a container.
2 — Inserting the product (usually by hand).
3 — Sealing the package.

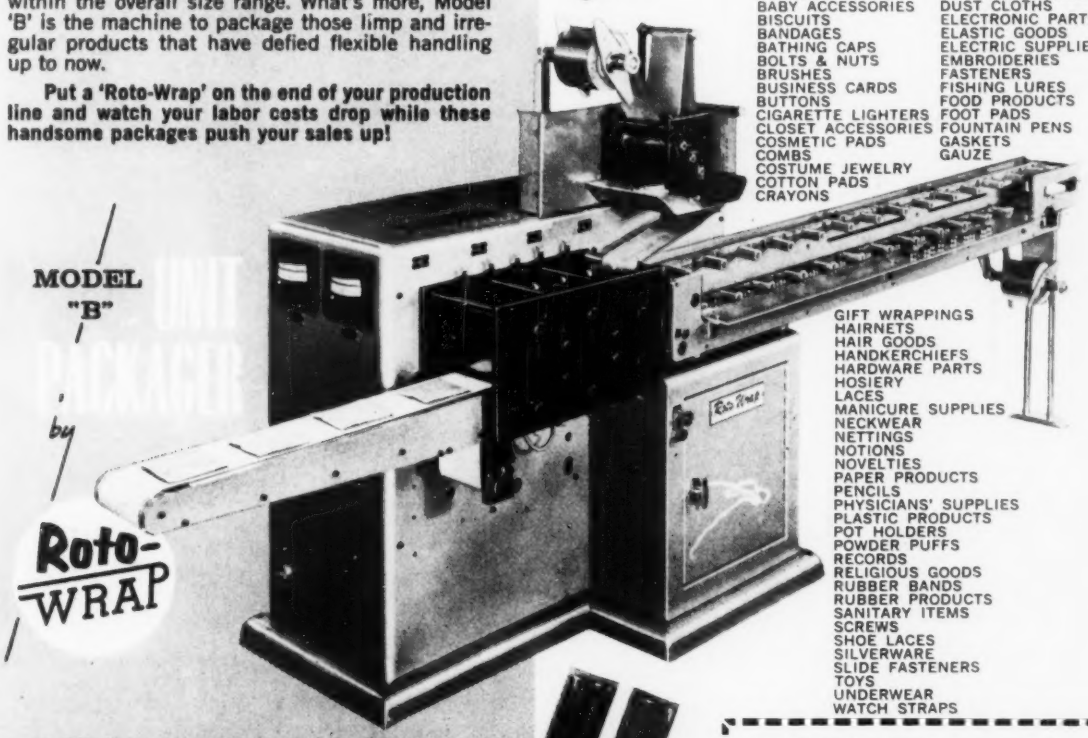
Roto-Wrap is high speed. Roto-Wrap is versatile. A quick changeover packages your other products within the overall size range. What's more, Model 'B' is the machine to package those limp and irregular products that have defied flexible handling up to now.

Put a 'Roto-Wrap' on the end of your production line and watch your labor costs drop while these handsome packages push your sales up!

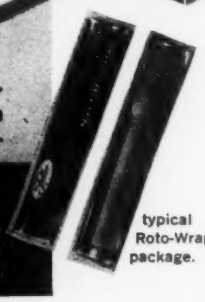
check this list for your product!

AIRCRAFT PARTS
BABY ACCESSORIES
BISCUITS
BANDAGES
BATHING CAPS
BOLTS & NUTS
BRUSHES
BUSINESS CARDS
BUTTONS
CIGARETTE LIGHTERS
CLOSET ACCESSORIES
COSMETIC PADS
COMBS
COSTUME JEWELRY
COTTON PADS
CRAYONS
CUTLERY
DENTAL SUPPLIES
DISH CLOTHS
DOILIES
DOLL ACCESSORIES
DUST CLOTHS
ELECTRONIC PARTS
ELASTIC GOODS
ELECTRIC SUPPLIES
EMBROIDERIES
FASTENERS
FISHING LURES
FOOD PRODUCTS
FOOT PADS
FOUNTAIN PENS
GASKETS
GAUZE
GIFT WRAPPINGS
HAIRNETS
HAIR GOODS
HANDKERCHIEFS
HARDWARE PARTS
HOSIERY
LACES
MANICURE SUPPLIES
NECKWEAR
NETTINGS
NOTIONS
NOVELTIES
PAPER PRODUCTS
PENCILS
PHYSICIANS' SUPPLIES
PLASTIC PRODUCTS
POT HOLDERS
POWDER PUFFS
RECORDS
RELIGIOUS GOODS
RUBBER BANDS
RUBBER PRODUCTS
SANITARY ITEMS
SCREWS
SHOE LACES
SILVERWARE
SLIDE FASTENERS
TOYS
UNDERWEAR
WATCH STRAPS

MODEL "B" UNIT PACKAGER
by
Roto-WRAP



The Model 'B' packages products on up to 9" wide. Optional equipment includes electric eye registration, hole punch and coding attachments.



typical Roto-Wrap package.

ROTO-WRAP MACHINE CORP.
SALES AGENT
CONAPAC CORPORATION
120 EAST 13TH STREET, NEW YORK 3, N. Y.

CONAPAC CORP., 120 E. 13 St., N.Y.C.

Gentlemen:
Please send additional information on the Model 'B'. My product(s) is _____

NAME _____

FIRM _____

ADDRESS _____

CITY _____ ZONE ____ STATE _____

with MECHANIZED SCREEN PROCESS PRINTING

BY **COLOR REPRODUCTIONS, INC.**

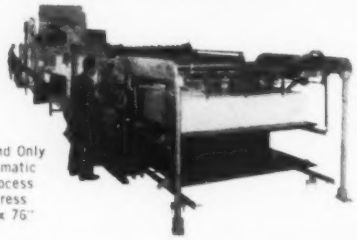
High Speed • Large Volume • Costs Less Than You Think

Today, quality printing need not be limited to letterpress, offset or gravure. It can be achieved by mechanized screen process at Color Reproductions, Inc.

Typical example is this award winning Shulton package, *millions* of which have been printed by Color Reproductions, Inc., on fully automatic presses.

Color Reproductions has made Silk Screen a major printing process . . . combining high speed, large volume instant drying, and precision multiple registry with eye-stopping brilliance, vibrancy and 3-D effects.

On your next packaging or point-of-sale job, it will pay you to investigate screen process printing by Color Reproductions.



Largest and Only Fully Automatic Screen Process Printing Press Size: 52" x 76"

PACKAGING COMES ALIVE WITH SCREEN PROCESS

- **Brilliant opaques, whites and metallics printed with one impression.**
- **Greater Flexibility . . . print on foil, plastics, paper, cardboard and plastic coated stocks.**
- **Bright and unusual results.**
- **Big savings in plates.**
- **Sheet sizes to 52" x 76".**
- **Striking fluorescent colors.**

WRITE FOR FREE BOOKLET ABOUT PACKAGING AND SCREEN PROCESS PRINTING TODAY!

COLOR REPRODUCTIONS, INC.
Garden State Road, Union, N. J.

Gentlemen: I am interested in knowing more about Screen Process Package Printing
☐ Please have representative call
☐ Please send FREE booklet

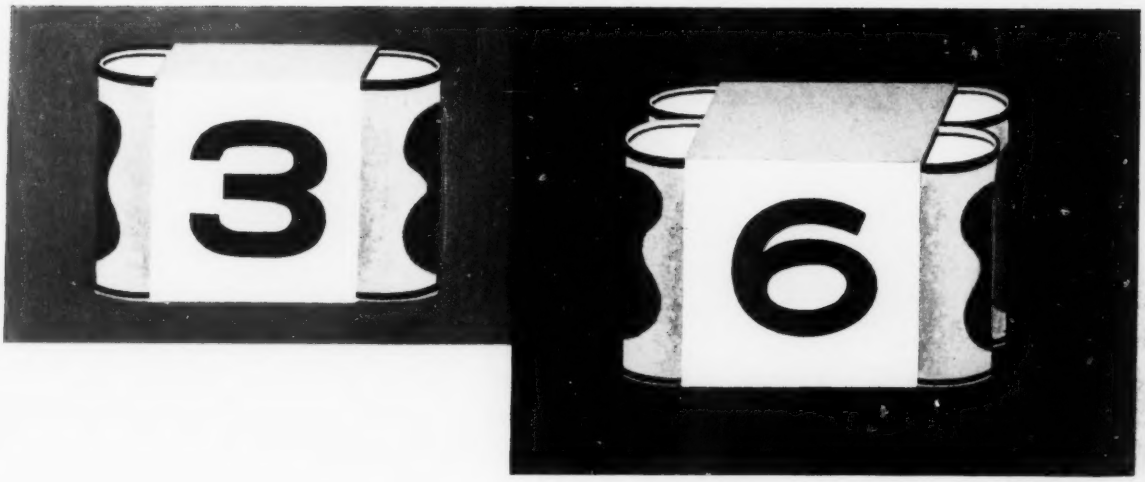
NAME .....
COMPANY .....
ADDRESS .....
CITY ..... STATE .....

MECHANIZED
SCREEN PROCESS PRINTING

COLOR REPRODUCTIONS, INC.

ONE OF AMERICA'S FINEST SCREEN PROCESS PRINTING PLANTS

Garden State Road, Union, New Jersey



WHAT'S YOUR DECISION?...

1 CAN PER SALE . . . 3 CANS PER SALE . . . 6 CANS PER SALE

It takes the busy housewife several impulsive seconds and one swift motion to complete her buying decision in the store. When she reaches for your product—

Will she come up with 1 can, 3 or 6?

It's YOU who make that decision for her at the point of sale. When your product goes to market in CAN BAND*, Container Corporation of America's multipack merchandiser, it will sell more units sale after sale because CAN BANDS are *so easy to see, pick up, carry and stack at home.*

Has your product been selling 1 can at a time in the stores? Wouldn't you like 3 or 6 sales for every 1 you make now? Write us today for complete multiple packaging information.

CONTAINER CORPORATION OF AMERICA

38 South Dearborn Street, Chicago 3, Illinois, and 59 other cities

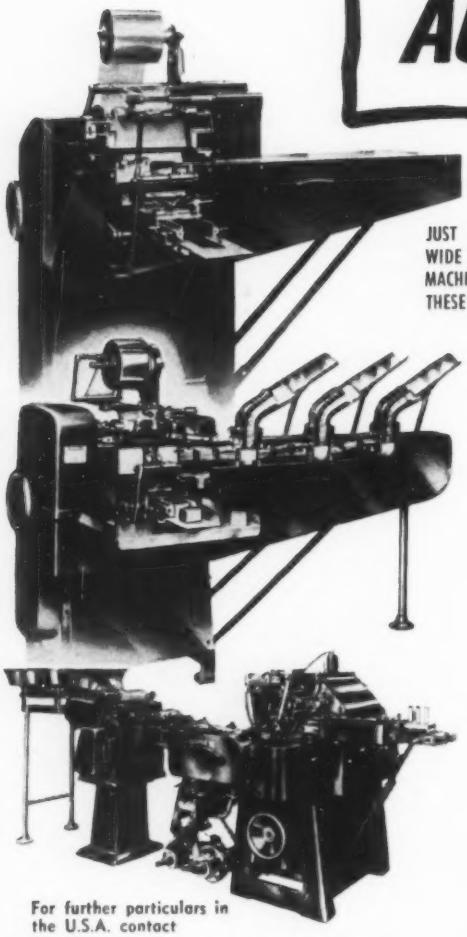
wrapping?

WHEN IT'S

• MORE OUTPUT • SIMPLER OPERATION AT LOWER CAPITAL COST • ECONOMY OF FLOOR SPACE

THEN IT'S

AUTO WRAPPERS!



JUST THREE OF THE WIDE RANGE OF A.W. MACHINES TO WRAP THESE & MANY OTHER PRODUCTS

For further particulars in the U.S.A. contact

WESTERN AGENT:
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Modern design can improve protection, cut packing and shipping costs and help sell your product.

As a consolidation of some of the oldest paperboard mills and plants in America, Central Fibre represents a considerable wealth of skill and know-how. Central Fibre's unusual growth in recent years reflects its great vitality.

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CENTRAL FIBRE PRODUCTS COMPANY

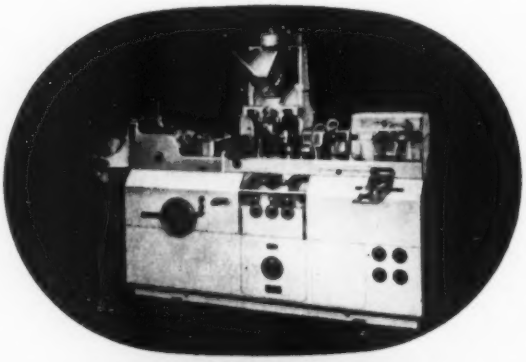
General Office: Quincy, Illinois

PACKAGING-MACHINES

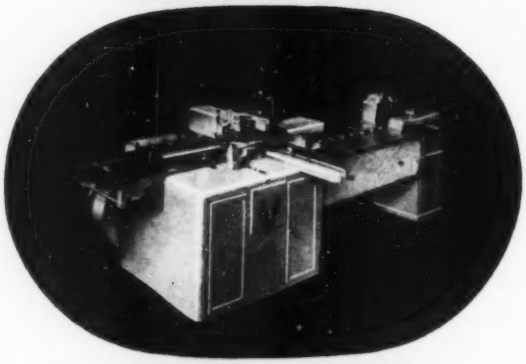
MfM

for counting, assorting and wrapping, for measuring and filling all kinds of pharmaceutical and food products.

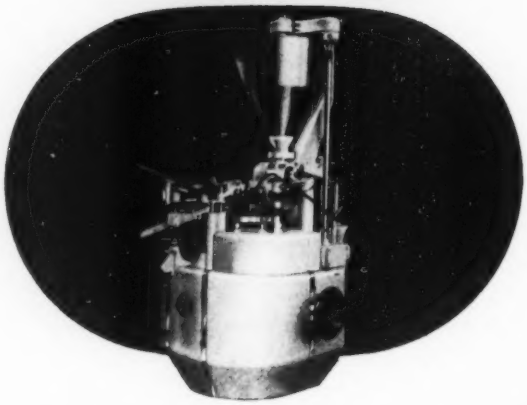
Fully automatic packaging machine for flat packages made from heatsealing cellulosic film, metal foil, and special paper qualities. Can be fitted with electrically operated weighers and positioning of the print by a magic eye.



Cartoning machine for the boxing of filled bags, tubes, bottles, small cylindrical containers, vials etc. The skillets may be closed by either glueing or inserting the endflap. A leaflet can be added if so desired.



Fully automatic tube filling and closing machine with automatic infeed, positioning of print by means of a magic eye, and with cap tightening device. The machine can be supplied for 4 different types of closure.



IWK

INDUSTRIE-WERKE KARLSRUHE Aktiengesellschaft · KARLSRUHE (GERMANY)

Correspondent's office: H. J. Jensen · 350 Broadway, New York 13, N. Y.
At the INTERPACK Düsseldorf, from 3/2/58 to 3/9/58 Hall B, Stand 109

World's First Packaging Line?

OLIVE OIL, as you see it being processed in this illustration, was one of the first products packaged for commercial distribution. It served Greek civilization as food, lamp fuel, preservative and ointment. 6th Century, B.C. processors collected the winter fruit in baskets to be bruised in a nearby mill. It was then pressed on crude marble blocks which funneled the juice into "measures"—clay jars of about three and a half quart capacity.

The versatile fluid was shipped in these primitive containers to merchants throughout the Mediterranean where it was sold, Aristotle mentions, for three drachmain—about 32 cents per quart.

Each transaction necessarily involved a considerable amount of haggling, for quality of product varied. Breakage was high, and the jars afforded only slight protection to the purity of the oil. The only labels they carried were prayers, perhaps inspired by the packaging problems of the day. The most common inscription archeologists have found to date is: "O Zeus, would that I might become rich."

The ancient Greeks were right in at least one respect. The package and the product were inseparable.

Which explains why so many manufacturers rely on rotogravure printed foil labels and overwraps by Rap-In-Wax. FOILRAP is engineered for their profit—gives more because Rap-In-Wax has more to give, in ability, equipment and exclusive FOILRAP advantages. The Greeks had a word for it, Ἀδιαληκὸν—Translation: "Complete Superiority."

RAP-IN-WAX
PAPER COMPANY
GENERAL OFFICES: MINNEAPOLIS 14, MINNESOTA

Rotogravure in 7 colors • Flexographic in 6 colors • Letterpress in 6 colors
Laminations and Polyethelene Extrusion Coatings • Waxed Papers

Lighting fixtures, with fluorescent lamps pre-installed, are packed in just the right amount of Gaylord corrugated packaging.

'JUST ENOUGH' PACKAGING SAVES MONEY

Naturally you're concerned about how much shipping protection you give fragile products. But more packaging than needed cuts your profit margin.

Gaylord's engineering and research staff can come up with exactly the right amount of corrugated packaging to do your job. A few of many successes: lighting fixtures, elegant glassware, costly oscilloscopes.

Find out now if you're overdoing a good thing. Call your nearby Gaylord packaging engineer.

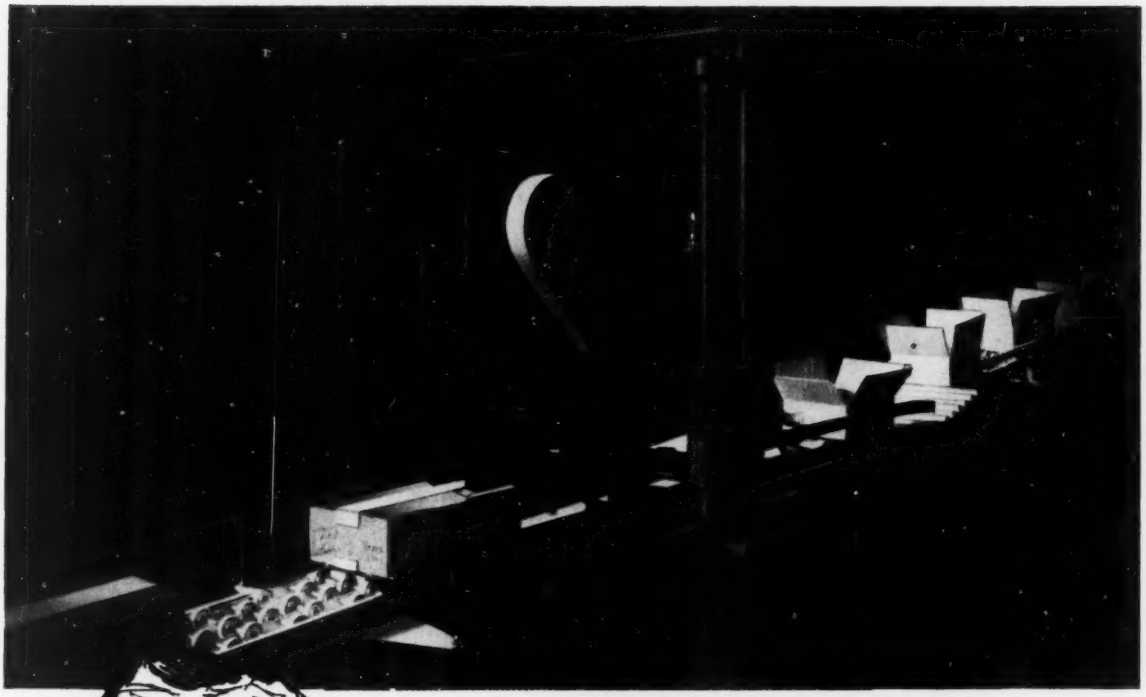
Gaylord Boxes

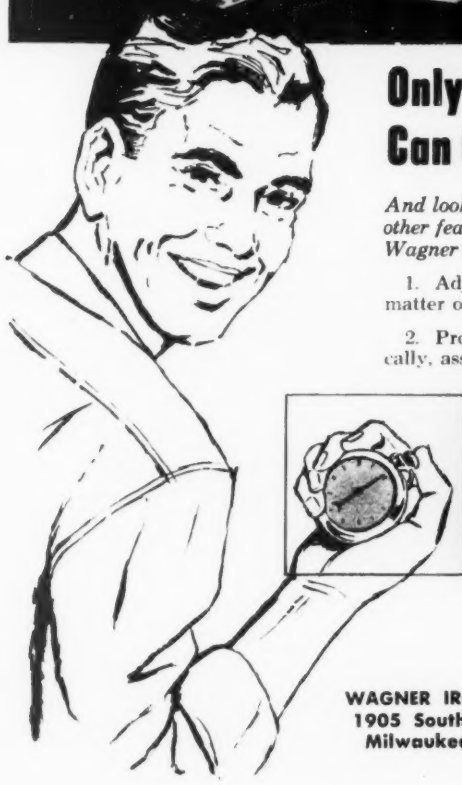
CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS
KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

Only Machine that Automatically Tapes Over 2000 New or Re-use Cartons Per Hour

...and reduces labor costs as much as 80%, too!





Only the WAGNER M-20 Can Guarantee Performance Like That

And look at just a few of the other features built into every Wagner M20—

1. Adjusts to any carton size in a matter of seconds, not minutes.

2. Proper tape length cut automatically, assures neat cartons every time.

3. Exclusive wipe down and compression assembly.

4. Rugged construction assures many years of trouble-free service.

It will pay you well to get complete information about the most modern taping machine on the market today.

wagner M-20 TAPING MACHINE

MAIL COUPON TODAY FOR FULL INFORMATION

WAGNER IRON WORKS
1905 South 1st Street
Milwaukee, Wisconsin

WAGNER IRON WORKS
Milwaukee 1, Wisconsin

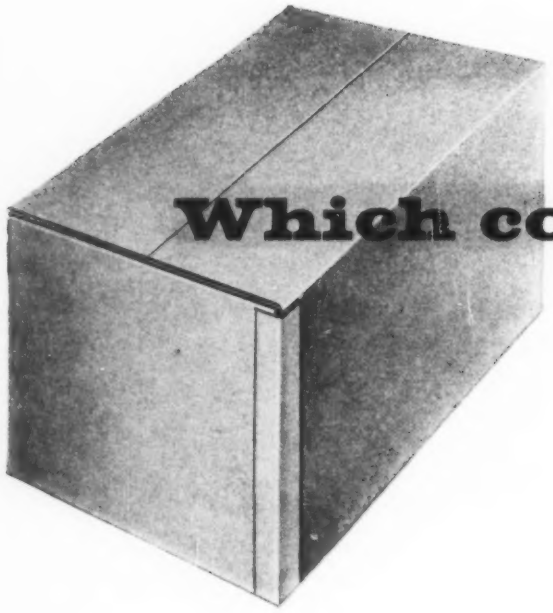
Please send complete information about the Wagner M-20 Taping Machine

NAME .....

ADDRESS .....

CITY .....

What you should know about "manufacturer's joints" in Union Boxes.



Which corner of a box

One corner is more important than the rest: where your corrugated shipping container is held together. This "hinge", or manufacturer's joint, often holds the key to your box's performance.

As the illustrations show, manufacturer's joints comprise three basic types: taped, stitched, and glued-lap. Each does a special job. Knowing which to use, and when, calls for a detailed analysis of your product and how it will be shipped.

Union Box engineers will be glad to make such a study for you. This is part of Union's complete structural design service. These fundamentals, however, are excellent guides:

Many shippers prefer tape

Taped Joint
(outside)

Tape is generally gum-backed, reinforced kraft paper or cloth, having high tear strength, especially in the lengthwise direction. Tapes are 2, 2½ and 3 inches wide and come in varying grades depending on degree of strength required.

should you examine first?

Advantages: no projections. In stacking, boxes lie flat, rock less. Also, entire interior area of box can be used. The taped joint is continuous, too . . . seals out dust and dirt. And it folds to make a true box corner.

On the other hand, tape is frequently more expensive than other manufacturer's joints. It can be adversely affected by moisture also. In some cases, tape may interfere with printing.

The sturdy stitch

Frequently used for heavy items like canned goods, this joint uses steel staples driven from the outside of the box panel. It is probably the strongest "hinge", gives the most positive closure, and is not affected by moisture or cold. It is usually the least expensive.

Stitched Joint (outside)

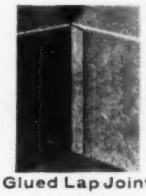
The closure, however, is not continuous. And, since the metal stitches may protrude inside the box, this joint is normally not recommended for fragile and prone-to-scratch articles.

The diagonal stitched joint shown is a typical arrangement. Others include vertical, horizontal, and double stitching.

Glued lap . . . the versatile joint

Flap may be adhered either to the inside or outside of the box, and to the end or side panel. Inside-flap gluing is the most popular. It is the only joint which leaves a completely uninterrupted exterior printing surface.

Like the taped joint, the glued lap joint is continuous . . . forms a true fold. Performance under adverse moisture conditions is questionable. Also, inside-lap does not give 100% clear inside-packing area.



Glued Lap Joint (inside)

Take full advantage of Union's accumulated knowledge in constructing and recommending manufacturer's joints for shippers in every industry. Consistently well-engineered features such as these offer the surest protection for your product and your shipping investment.

Write for Union's free, informative booklet "Manufacturing Corrugated Boxes."

union camp

UNION BOXES

UNION BAG-CAMP PAPER Corporation
233 BROADWAY, NEW YORK 7, N. Y.

Factories: *Savannah, Ga.; Trenton, N.J.; Chicago, Ill.; Lakeland, Fla.*

Sales Offices: *Eastern Division—1400 E. State Street, Trenton, N.J.*
Southern Division—P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
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almost every frozen seafood product . . .

has more glittering display value . . .

greater heat-and-serve consumer convenience . . .

when it's in a proven-by-sales package by . . .

The Plus Container

EKCO-ALCOA CONTAINERS *Inc.*
Wheeling, Illinois

EKCO is the registered trademark of Ekco Products Company. ALCOA is the registered trademark of Aluminum Company of America. The corporate name and combination mark, EKCO-ALCOA, is used under license to the manufacturer by each of these companies.

Made for each other...

Brilliant Transparent Colors

High Press Speeds

Non-Bleeding

Block-Resistant

Strong Adhesion

If it's foil you print—whether functional package or fancy wrap—use FOILBRITE INK to match the natural glitter of the stock. Made specifically for printing primed aluminum foil, BBD FOILBRITE INK combines see-thru transparency with extra color brilliance . . . provides the quality look that invites the eye and clinches the sale.

FOILBRITE INK has what it takes to make foil packages stand out on shelf or self-service rack . . . rich colorful sparkle, sharpness of print and outstanding scratch-resistance. And you'll appreciate FOILBRITE'S extra performance properties too—fast-drying for higher production speeds, solvent-balanced to minimize washups, non-blocking at high temperatures to insure against stock spoilage.

Find out how FOILBRITE INK can wrap up any foil-printing problem, enable you to get quality results and increased production. Contact BBD today.

Ask your nearest office for FOILBRITE printed samples and informative technical bulletin . . . or write direct to Bensing Bros. and Deeney, *3301 Hunting Park Avenue, Philadelphia 29, Pa.*

Bensing Bros. and Deeney

Flexographic Ink Specialists

Manufacturing plants in
PHILADELPHIA • CHICAGO • SAN LEANDRO, CAL.
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Sun

A subsidiary of Sun Chemical Corporation

Sales offices in all principal cities

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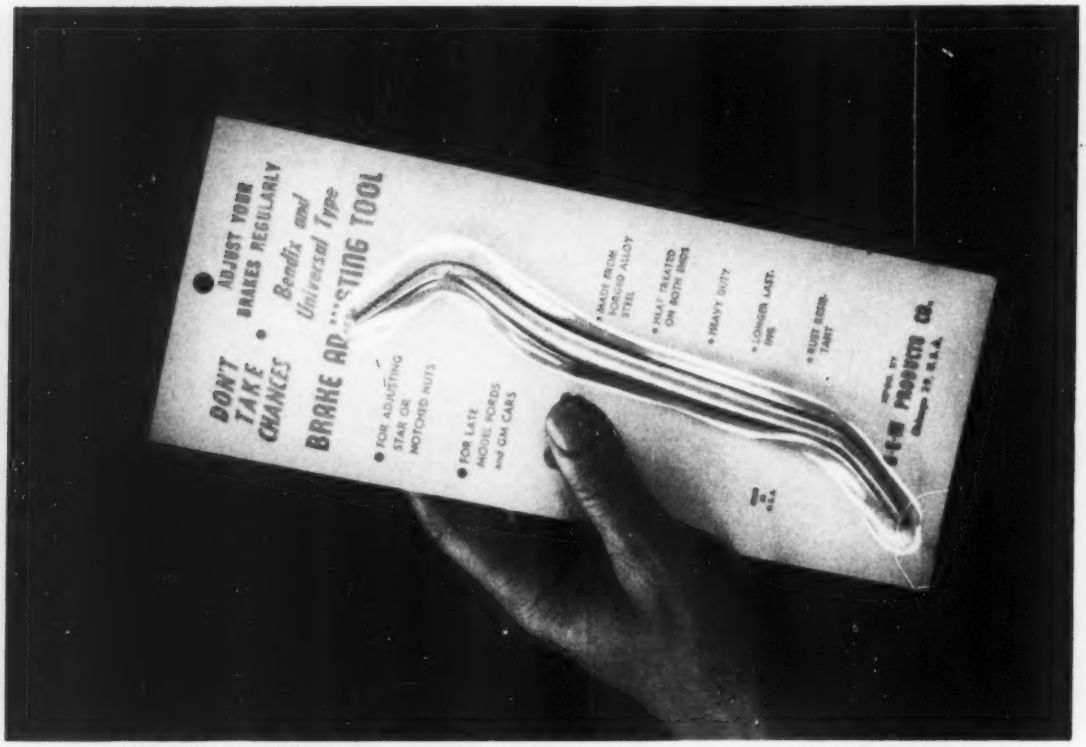
To improve package appeal specify a Du Pont


ADJUST YOUR BRAKES REGULARLY
DON'T TAKE CHANCES
Bendix and Universal Type
BRAKE AD...STING TOOL
• FOR ADJUSTING STAR OR NOTCHED NUTS
• FOR LATE MODEL FORDS and GM CARS
• MADE FROM FORGED ALLOY STEEL
• HEAT TREATED ON BOTH ENDS
• HEAVY DUTY
• LONGER LAST-ING
• RUST RESIS-TANT

Skin packaging with film of ALATHON and MYLAR by U. S. Packaging, Chicago, Ill., for O•E•M Products Co., Chicago

Now—all the sales advantages of skin packaging at lower cost, with MYLAR® coated with ALATHON® 16

- Improved package appearance
- Long shelf life
- Pilferage eliminated
- Multiple sales potential
- Immediate brand identification

A unique skin packaging film of Du Pont ALATHON* polyethylene resin and Du Pont MYLAR** polyester film has been developed by the Print-A-Tube Co. of Rochelle Park, N. J. The new film permits the use of uncoated, unperforated paperboard, speeds the packaging cycle and opens the door to the automation of skin packaging. All this makes the entire process available to you at savings up to half the present cost. And commercial machinery is available for skin packaging with this film.

The side of the film coated with ALATHON 16 is heat-sealed directly and easily to the paperboard. This means no more special coating and costly perforation of the paperboard in order to draw the vacuum. With this new film, the board remains porous and the vacuum is drawn directly through, pulling the heated film tightly around your product. A single heat and vacuum cycle with this film requires an average of only *ten seconds*, compared with the usual 40-second cycle, a reduction of 75%.

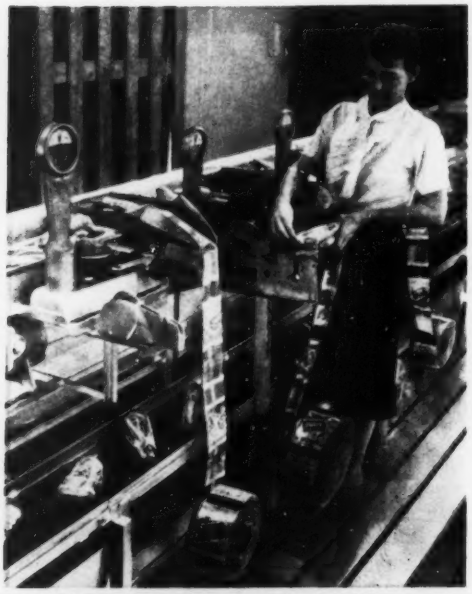
This new film also adds clarity and sparkle to skin-packaged items and makes possible a big multiple-sales potential. The ALATHON 16 gives this film excellent sealing qualities and the combination of ALATHON and MYLAR means unlimited shelf life.

*ALATHON is Du Pont's registered trademark for its polyethylene resins

**MYLAR is Du Pont's registered trademark for its polyester film

at lower cost
ALATHON® polyethylene resin

PACKAGING TRENDS Film • Molded Products • Coatings



PERFORATIONS BETWEEN BAGS made of an ALATHON polyethylene resin speed packaging time and cut costs for the J. S. McManus Produce Co., Weslaco, Texas. These tough, sales-appealing "Rolla-Bags" were developed by the Continental Can Co., Inc., Shellmar-Betner Div., Newark, Ohio.

"ETIQUET ROLIT" SQUEEZE BOTTLE features rotating dispensing ball, supported by rings molded integrally with head of bottle. The lightweight, unbreakable bottles are molded of an ALATHON by the Bradley Container Corp., Maynard, Mass., for Lehn & Fink Products Corp., Bloomfield, N. J.

Whatever your particular need in a packaging material, you will find the versatile family of ALATHON polyethylene resins has been specially formulated to answer every requirement. Each one possesses a particular property or combination of properties which make it outstanding for a specific application. Every packaging need . . . film, coatings (including skin packaging), squeeze bottles, tubes, closures and other specialized containers . . . has a corresponding ALATHON polyethylene resin or resins which have been tailored expressly for it.

For tough film, ALATHON 14 is outstanding. But if your packaging calls for the qualities of sparkling transparency and outstanding stiffness, ALATHON 34 fulfills these requirements. ALATHON 34 is also well suited for coatings. Its outstanding impermeability to water vapor enables powdered products, feeds and foodstuffs to retain their freshness, remain free from lumping and caking.

ALATHON 20 molded in the form of squeeze bottles, tubes and closures offers outstanding resistance to environmental stress cracking. If you require greater stiffness and a higher degree of impermeability for molded containers, ALATHON 37 is well suited. ALATHON 31 has been tailor-made for thermoformed containers.

For your product to make the desired impression, it pays to begin with the finest packaging material available . . . a Du Pont ALATHON. For further information on the properties and applications of this versatile material, just clip and mail the coupon.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept.
Room 252, Du Pont Building, Wilmington 98, Delaware

Please send additional property and application data on Du Pont ALATHON polyethylene resins for ☐ skin packaging; ☐ other packaging applications.

*Name*_____

*Company*_____ *Position*_____

*Street*_____

*City*_____ *State*_____

*Type of Business*_____

In Canada: Du Pont Company of Canada (1956) Limited, P. O. Box 660, Montreal, Quebec.

New low-melt polyethylene...

Epolene C

Epolene C

EASTMAN LOW-MELT POLYETHYLENE

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York City; Framingham, Mass.; Cincinnati; Cleveland; Chicago; St. Louis; Houston. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

Polyethylene paper coatings can now be applied from a hot melt

With Epolene C, paper coaters and converters can use wax-coating machines, modified to operate at somewhat higher temperatures, to apply polyethylene directly to paper sheets or web. The need for extrusion-laminating equipment is eliminated.

Epolene C is a new type of polyethylene possessing many of the properties generally associated with plastic grade resins, yet it can be handled much like a moderate to high melting point wax.

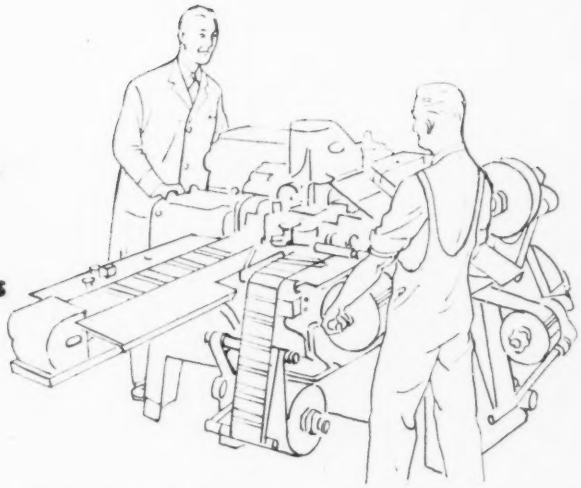
Because of its wax-like characteristics, Epolene C can be applied as a hot melt coating, with or without modification. At 300 F, for instance, its viscosity is only 8,000 centipoises. The addition of 25% paraffin, with which Epolene C is completely compatible, reduces its viscosity to only 1,300 centipoises at this temperature.

Hot melt coatings of Epolene C compare favorably with plastic grade extrusion coatings. Moreover, hot melt Epolene C coatings, being fluid, penetrate the stock to a greater degree and thus assure a more complete bond with the paper. An unusually high gloss is achieved and the paper can be coated on both sides, if desired.

Flexibility, strength and chemical inertness have made polyethylene-coated papers increasingly popular. The more economical coating procedure now possible with Epolene C promises to extend the use of polyethylene-coated papers to many new fields.

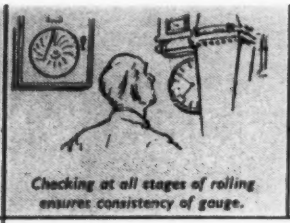
Investigation of processing techniques and product applications for Epolene C is continuing at Eastman's customer service laboratories. We will be glad to supply samples and further information and to assist you in evaluating this new low-melt polyethylene. Write today to Chemical Division, Eastman Chemical Products, Inc., a subsidiary of Eastman Kodak Company, Kingsport, Tennessee.

The need to maintain trouble-free operation of high-speed laminating and packaging machines has led to greater demands upon the high qualities of foil.

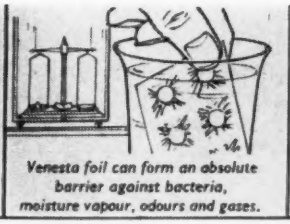


The excellence of Venesta foil as the modern packaging material is due to...

Venesta foil is second to none in brilliance of finish



Checking at all stages of rolling ensures consistency of gauge.



Venesta foil can form an absolute barrier against bacteria, moisture vapour, odours and gases.

Venesta foil can be laminated to paper or plastic film for specialized end uses.

Direct printing or embossing on Venesta foil eliminates the need for labels.

Throughout manufacture and processing, Venesta foil is checked and rechecked. Because of this constant attention to quality at *all* stages, packers and converters can feel confident that their machinery will run more smoothly, and that lamination will be carried out more satisfactorily.

VENESTA FOIL

Agents for the United States of America & for Canada
PARSONS & WHITTEMORE INCORPORATED
250 Park Avenue, New York, 17, N.Y. phone Yukon 6-6000

For the addresses of our Agents in other countries write to VENESTA LIMITED, Vintry House, Queen Street Place, London E.C.4, England

VENESTA

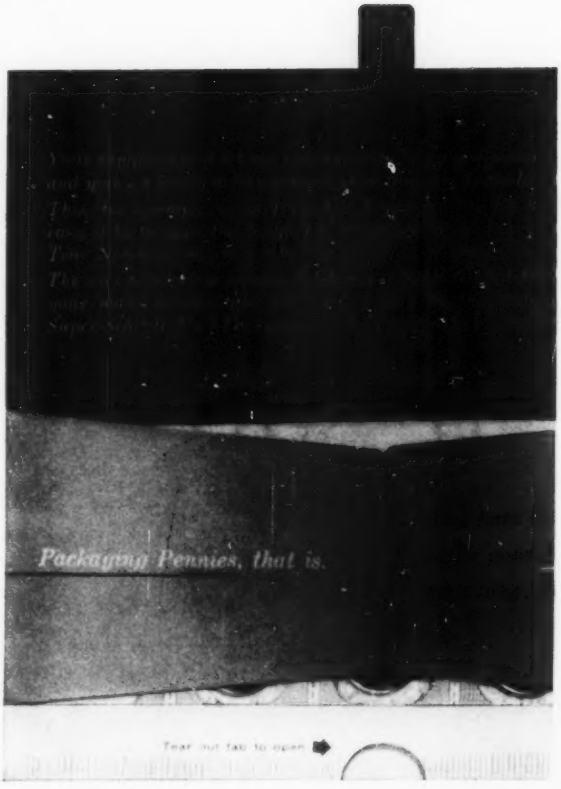
P *is for packaging*
is for plus
is for **PENNIES**

...the pennies that can come your way from easy-to-open Ivers-Lee Super-Sealtite Unit-Packages

The easy opening provided by I-L Tear Notches that are exclusive I-L Super-Sealtite features will put money in your pocket, immediately . . . through certain consumer acceptance and ready use of your product.

When you have a product to sample or to sell it will pay you to get the easy opening facts about I-L Unit-Packages. If your product can be unit-packaged, the creative merchandising facilities of I-L can give you an original package of high profit-making potential.

Your I-L Representative will be happy to discuss your sampling and selling programs with you and demonstrate how the use of I-L Super-Sealtite can result in profits for you.



'IVERS LEE CO.
215 CENTRAL AVENUE NEWARK, NEW JERSEY

New I-L package patents, design patents and patents pending.

Gioia Macaroni Co., Inc. Buffalo, N.Y. use 16 pt. Luster-Board for packaging Egg Elbow Macaroni. Carton produced by Rochester Folding Box Company.

Good taste in packaging
by

LusterBoard

More and more food manufacturers are wrapping their products in LusterBoard. LusterBoard stands out on crowded shelves. Note how the macaroni photograph reproduces. Feel the satin-smooth, quality finish of the package. Almost every product looks its best in LusterBoard—candy, cosmetics, first aid supplies, foundation garments, lingerie, pharmaceuticals, photographic equipment, textiles, whiskey, beverages, and food, just to name a few.

Here are some of the LusterBoard advantages!

- ★ So strong that laboratory tests prove that its strength equals or surpasses boxboards two to four points heavier.
- ★ You get fidelity of halftone reproduction.
- ★ Fast ink setting and drying, making LusterBoard ideal to print and handle.
- ★ Lusterkoted surface (not laminated) applied directly to high grade white board.
- ★ Smooth folding and superb embossing effects.
- ★ Range of 14, 16, 18, 20, 22, and 24 point thickness.

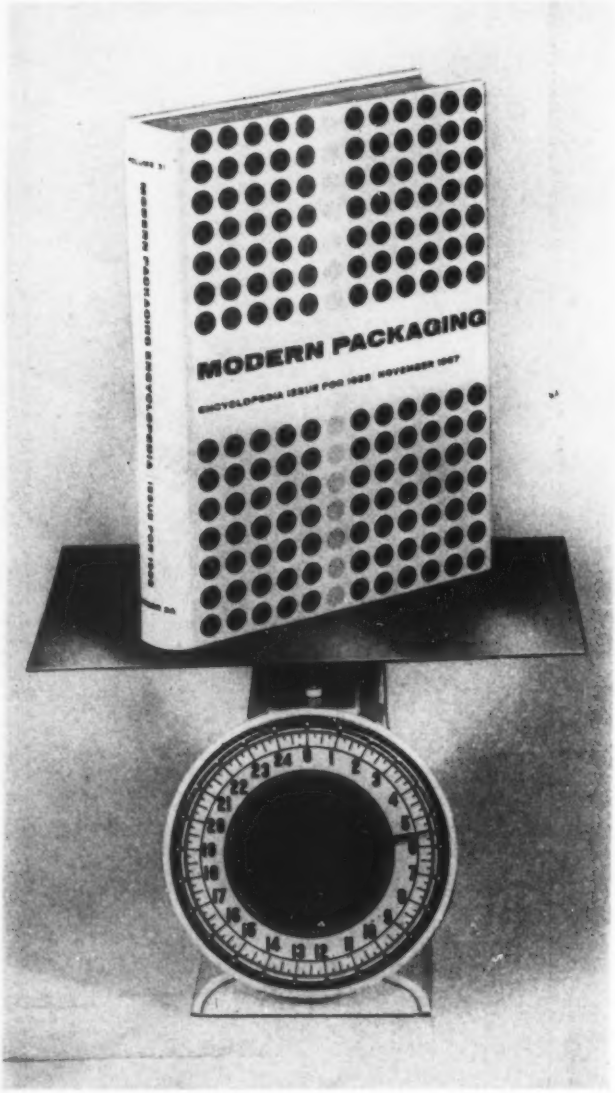
Samples, demonstration pieces, and technical information are available from LusterBoard headquarters:

S. D. Warren Company, 89 Broad Street, Boston 1, Massachusetts.

Warren's
HIGH STANDARD
Printing Papers

WARREN'S LusterBoard

Over 5 pounds!



. . . which is nothing
compared to the weight
it carries with the
Modern Packaging
subscribers who use it
day-in, day-out
as a purchasing guide,
production tool,
business advisor
and cost consultant.
They honestly swear by it
—it saves them so much time,
money and trouble.
But how about you?
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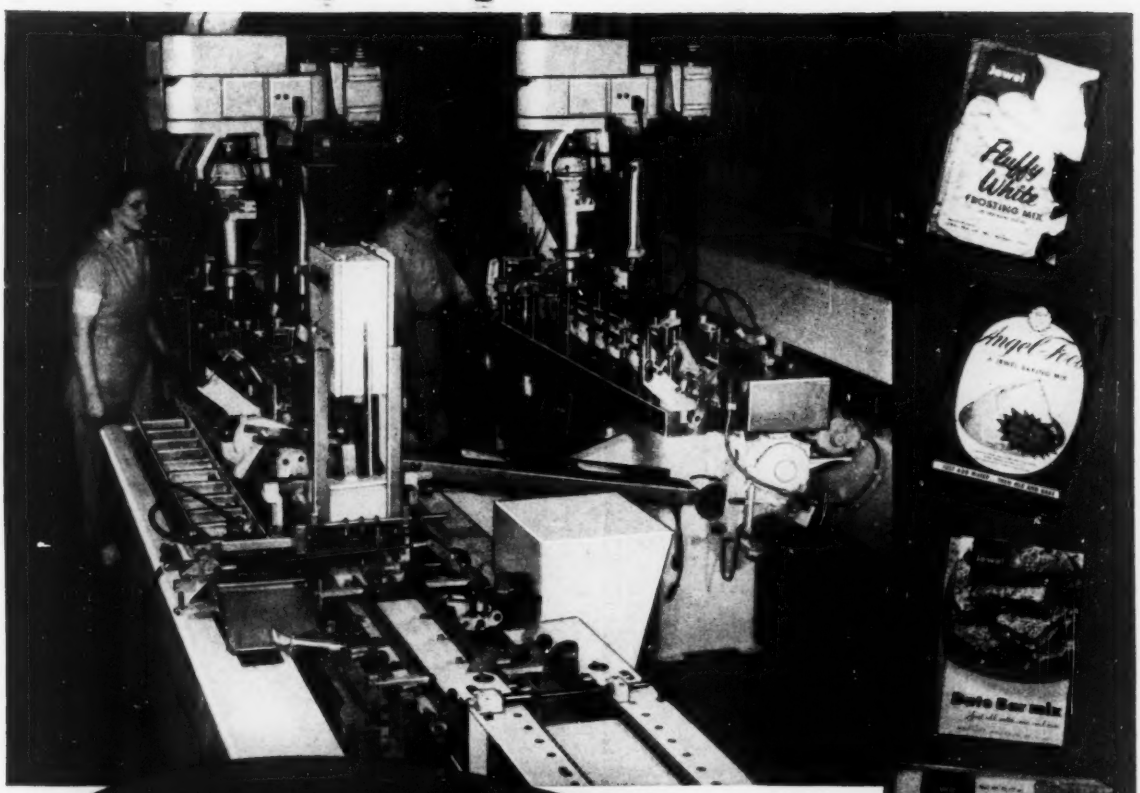
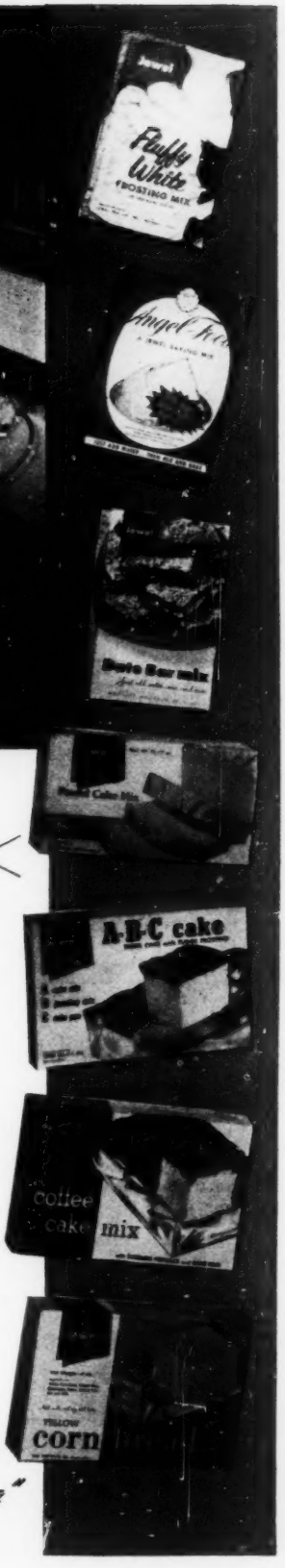
PACKAGING SUPPLIERS: Because the Encyclopedia is the *only* standard reference annual in the field, the *single* ad you place in it works for you a full *52* weeks a year!



7 times a winner!

Seven different items . . . products requiring various pouch and carton sizes . . . are all packaged on this *one* versatile Bartelt Line at Jewel Tea Co., Inc. Bartelt high-speed, automatic equipment will handle liquids, powders, or solids in single or multiple units. Pouches are formed from heat-sealable papers, films, or foils . . . filled quickly and accurately . . . and strongly sealed. Any desired number of pouches can be inserted into cartons that are pre-formed in the cartoner unit. Whatever your packaging problem, let us help you. Write today. Our experienced personnel are here to help you.



BARTELT ENGINEERING CO.
1900 HARRISON AVENUE
ROCKFORD, ILLINOIS
New York Office, 370 Lexington Ave.

"Machinery for Creative Packaging"

Royal stock plastic bottles, available in a wide range of styles and sizes, are easily and economically adaptable as containers for a multitude of products. The automotive and petroleum industries, as illustrated above, use Royal stock bottles to excellent advantage.

Royal designs and produces containers for leading manufacturers throughout the nation and has complete facilities to produce private mold designs at surprisingly low cost.

Perhaps you, too, have a product that can be better packaged in a Royal "container of distinction." We sincerely invite your inquiry.

Bottles from stock molds (1¼ oz. to 32 oz.) are stocked by these distributors:

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Decorating Co.
155 Oxford St.

CHICAGO
Berman Bros., Inc.
1501 So. Laflin St.

MIAMI, FLA.
Magic City Bottle &
Supply Co.
1380 N.W. 23rd St.

SAN FRANCISCO
Marketing Agents, Ltd.
207 Powell St.

MONTREAL
Browns Bottle &
Supplies, Inc.
1655 Des Carrieres St.

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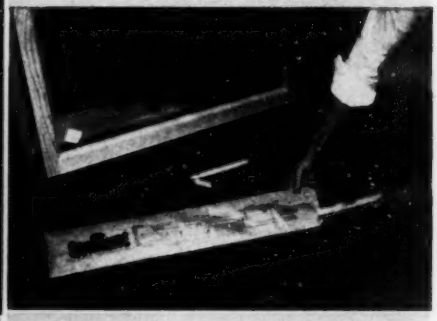
Royal containers are made under U.S. Patent No. 2,750,624

ROYAL MANUFACTURING COMPANY, INC.
PRESCOTT, ARIZONA

"TELL-ALL" PACKAGING! Thilco Specialty Bags prove the most simplified, convenient, low cost means for packaging Bon-Dee metal sink frames. Practical in more ways than one, because there is ample space for installation instructions and sales copy where you want it—on the package that carries the product!

ALL IN ONE! This manufacturer precautions against loss of separate instruction sheets. Complete details for mounting this bicycle basket are imprinted right on the face of the parts bag and a good selling point is the picture showing how easily the job is done — A bag package that combines functional purpose with service and advertising value.



FUNCTIONAL AND ECONOMICAL! A producer of window units found that packaging the hardware parts in cartons was all too costly. Thilco created a low cost, tough and durable Specialty bag that not only safely packages the parts but also features detail drawings and assembly instructions. Costly, separate instruction sheets were eliminated entirely.

PACKAGES ITS PRODUCT—SELLS OTHERS! The manufacturer of Penthouse products packages a large, closet garment bag in this Thilco Specialty bag. Complete instructions for product assembly are imprinted on the face of the bag and the remaining space utilized for advertising other allied products in the line.

THESE THILCO FUNCTIONAL BAGS SOLVE TOUGH PACKAGING PROBLEMS

. . . save users thousands of dollars in costly packaging and sales literature!

There's a big swing to Thilco SPECIALTY Bags in packaging and it's easy to understand. As these typical examples testify, Thilco Bags serve multiple functions with resultant effective economies.

Thilco Specialty Bags are almost unlimited in packaging scope. EFFICIENT . . . they simplify many packaging operations — require less storage space than other type containers — and also simplify inventory control in unit packaging. VERSATILE . . . they are available in numerous paper grades and duplex combinations to meet most any functional requirement. PRACTICAL and ECONOMICAL . . . they combine product with allied literature into one package unit at a minimum of extra cost.

Investigate Thilco SPECIALTY Bags today. More than likely their wide range packaging possibilities will amaze you.

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CLEAR BOX

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SOLID COLOR

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Vlchek will make opaque plastic boxes in any color you desire. This box is maroon with gold leaf lettering hot stamped into the cover.

PLASTICS DIVISION

THE VLCHEK TOOL CO.

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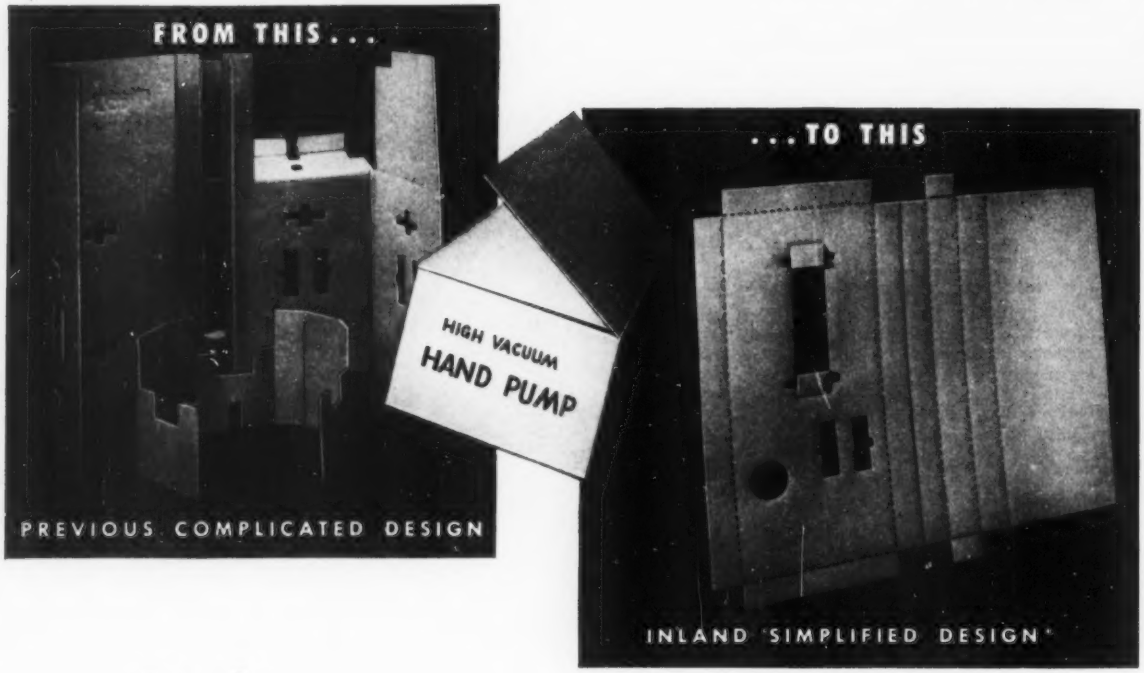

*Result: 30% Reduction in Packaging Labor Cost for this Inland Customer

● This two-piece inner packing, with its complicated tabs and folds, required too much costly assembly time. That's the problem Inland package engineers solved with their new, one-piece design . . . cut packaging labor cost 30% and, at the same time, provided complete protection for the products of this well-known pump manufacturer. (Name on request.)

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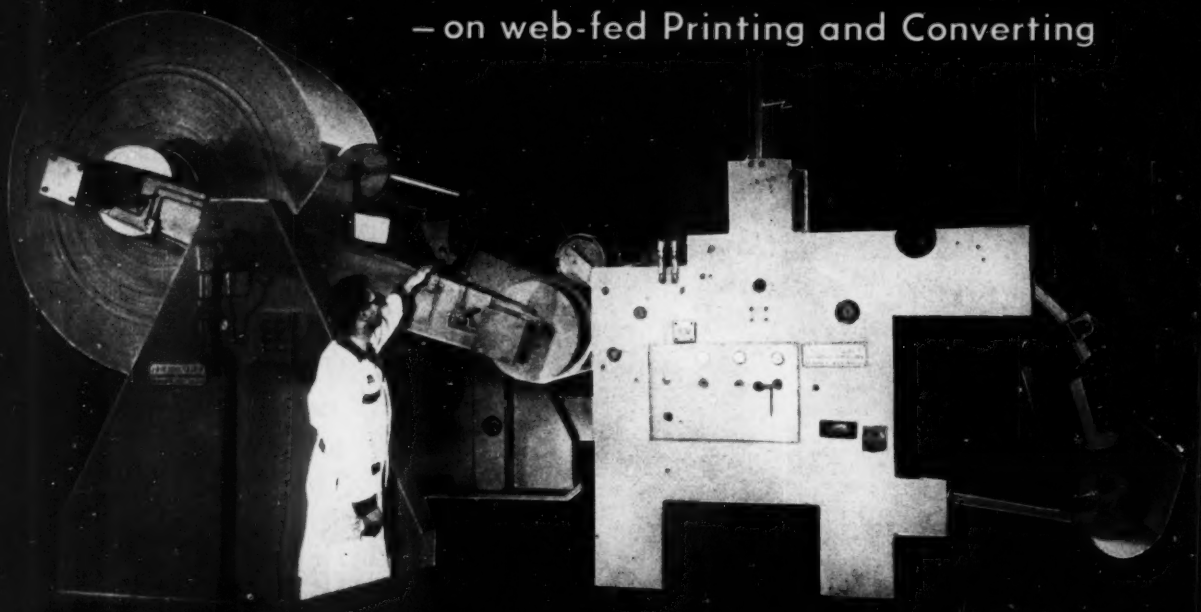

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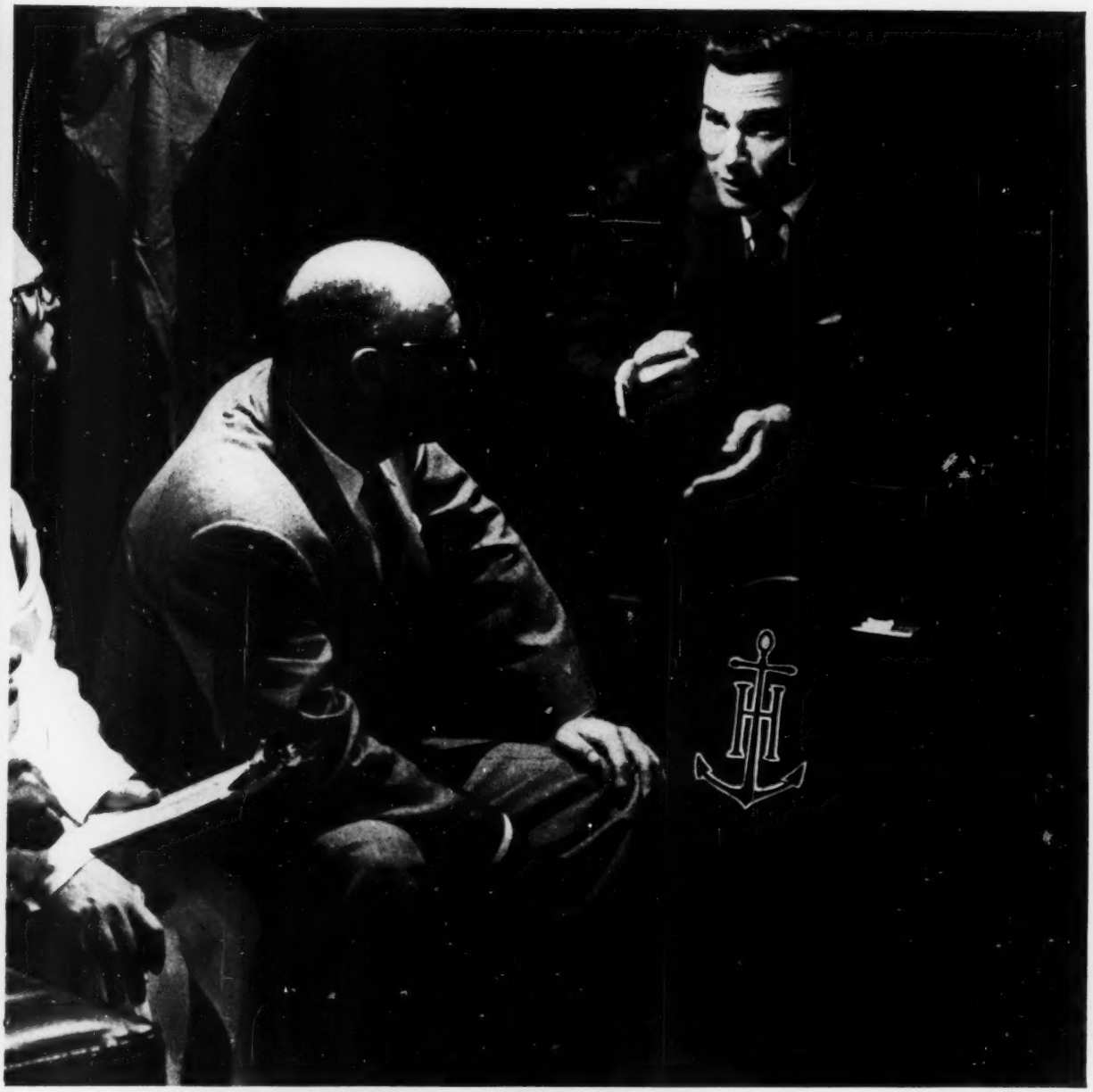

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Contact your Anchor Man soon. We know you'll like his quality-controlled Anchorglass* containers, Anchor* closures and sealing machines. We know you'll like his service. We know you'll want him on your team, too. Anchor Hocking Glass Corporation, Lancaster, Ohio. Branch offices in all principal cities.

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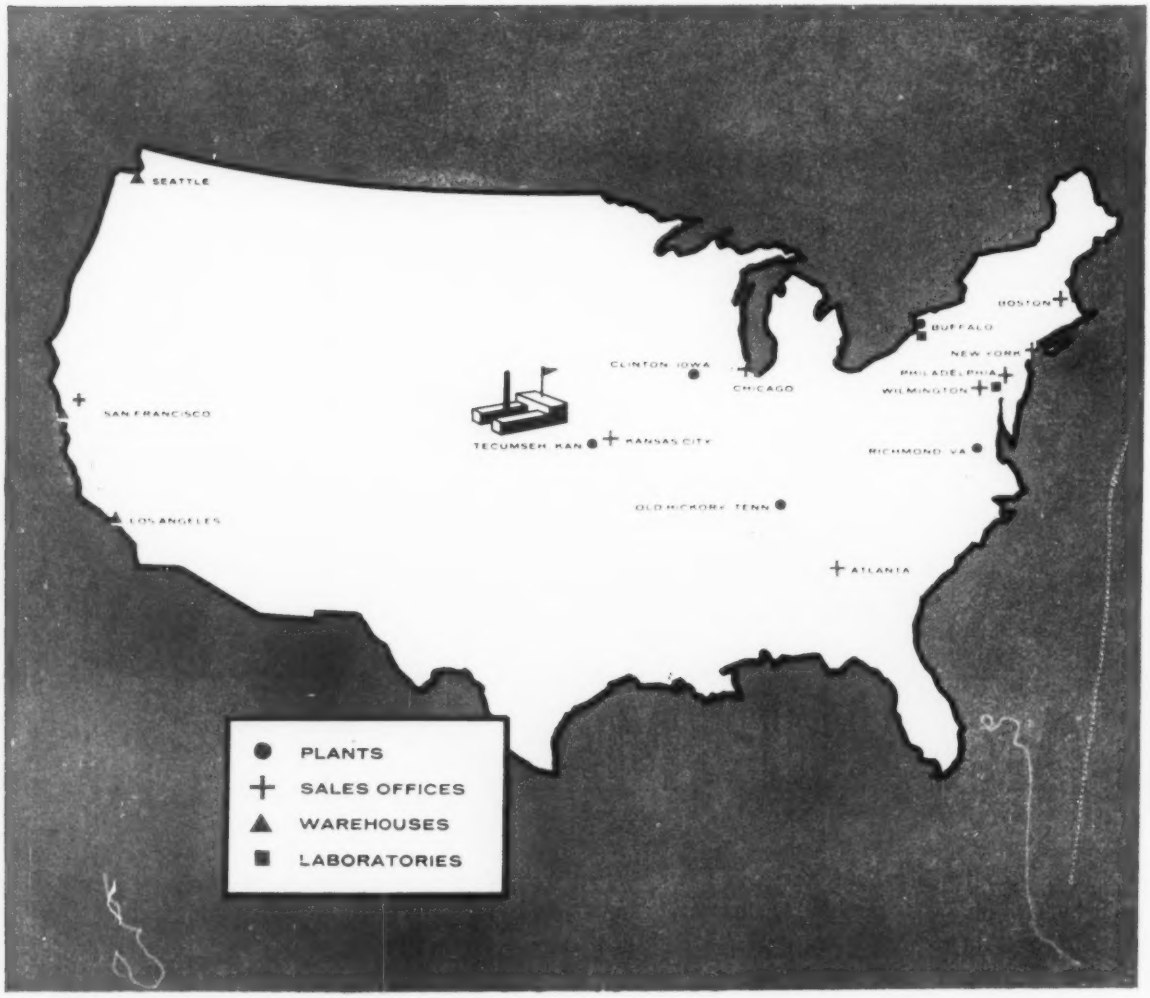
At your service...

a nationwide network of cellophane



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Here's why your Du Pont cellophane representative can serve you so efficiently. He can call on a closely integrated, coast-to-coast network of modern plants and warehouses to supply you with the finest-quality cellophane . . . in a wide variety of types . . . in the quantity you want when you need it.

And Du Pont service really begins when the film is in your plant. Your Du Pont representative—backed by a team of expert technical specialists—will work with you to assure maximum efficiency and economy.

Find out about Du Pont's extensive services...see how they can contribute to a better packaging operation. Call your Du Pont representative or write: E. I. du Pont de Nemours & Co. (Inc.), Film Department, Wilmington 98, Delaware.

SPECIFY DU PONT *cellophane by code designation when you order. That way, you'll be assured highest-quality film, product of Du Pont research and experience. Du Pont manufactures over 100 varieties of cellophane to meet your particular packaging needs.*

DU PONT

REG. U.S. PAT. OFF.

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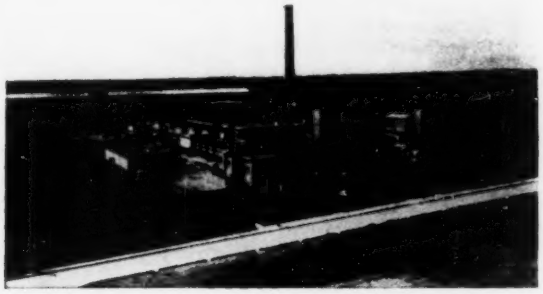
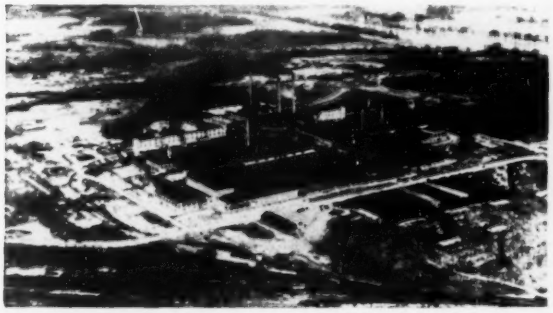
facilities helps your Du Pont representative serve you better

Improved films flow from these strategically located Du Pont plants . . .

BUFFALO, N.Y., is the home of one of Du Pont's laboratories for the development of new films and the largest plant for producing the popular new "K" films.



RICHMOND, VA., produces the bulk of cellophane for the tobacco industry . . . serves the southeastern states with many types of film to meet packagers' needs.



OLD HICKORY, TENN., makes many varieties of cellophane including extra protective Du Pont "K" film to serve growing industries in the central South and Southwest.

CLINTON, IOWA, has added new K-203 cellophane to its line to meet growing demand. Installation of additional modern production equipment is now complete.

DU PONT cellophane

leading the packaging field for 33 years
...designed for the needs of the future

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Strategic Location—Within fast shipping time of any customer in the major foil markets, Belpre is situated close by Kaiser Aluminum's huge new Ravenswood plant—the most modern and efficient rolling mill in the country. The closeness of these plants provides an important "plus" for Kaiser Aluminum's fully integrated foil operations.

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New Packaging Laboratory—Kaiser Aluminum announces a new packaging laboratory where a newly organized staff of the country's finest specialists are now at work developing and designing new products, new techniques and new packaging equipment. The full facilities of this laboratory and the assistance of our staff are available to you for solution of your specific packaging problems.

For complete information on Kaiser Aluminum's foil laminating plant and packaging laboratory facilities, call the Kaiser Aluminum sales office listed in your telephone directory. Or write Kaiser Aluminum & Chemical Sales, Inc., ***General Sales Office,*** Palmolive Bldg., Chicago 11, Ill.; ***Executive Office,*** Kaiser Bldg., Oakland 12, Calif.

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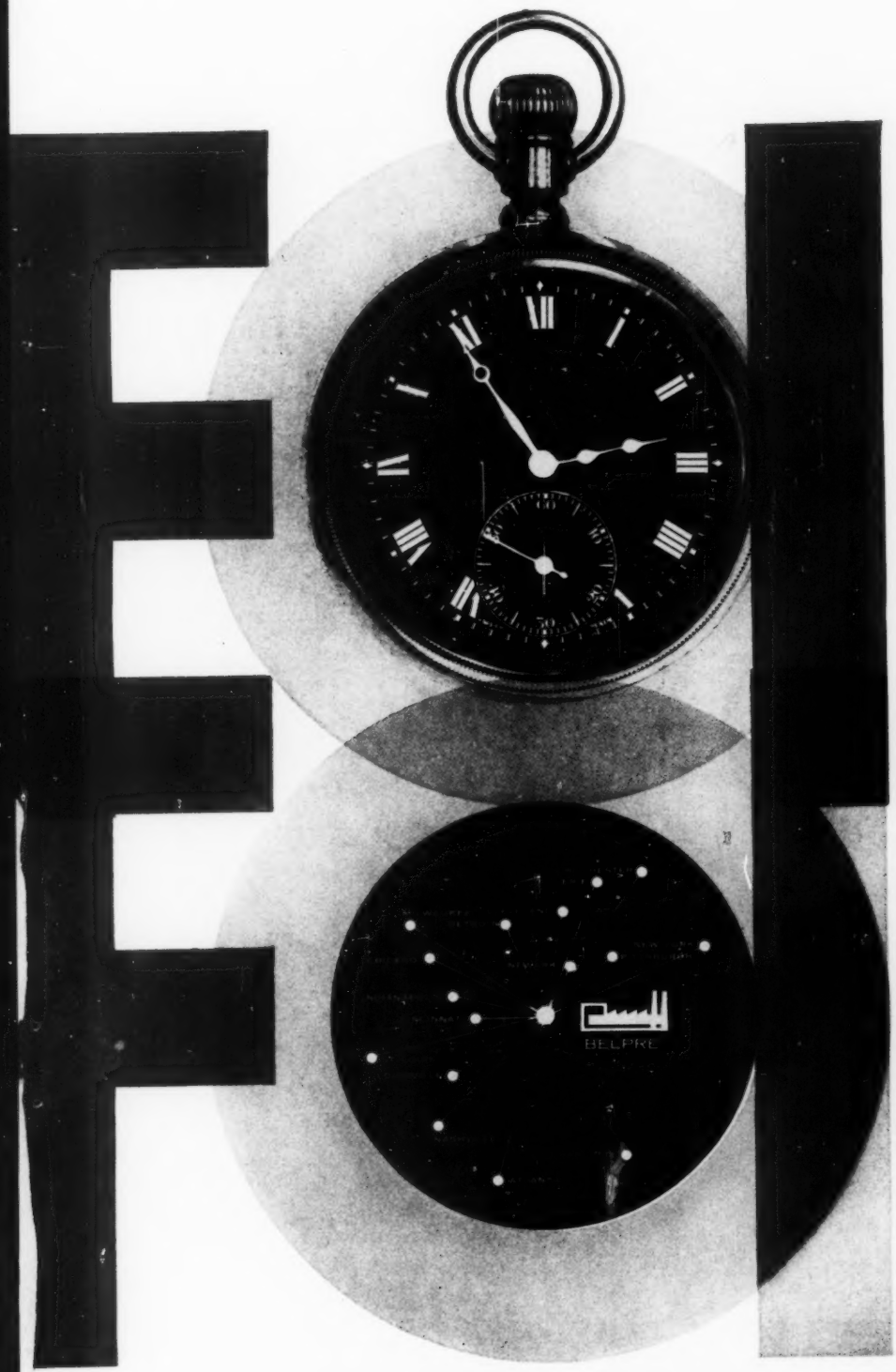
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GPI's HYDRY ink is being used successfully on all types of sheet and web-fed letterpress machines—including many printer-slotters—and performs equally well with metal or rubber plates. Find out how it can give you the print quality and production economy you want—call for a GPI-man today.

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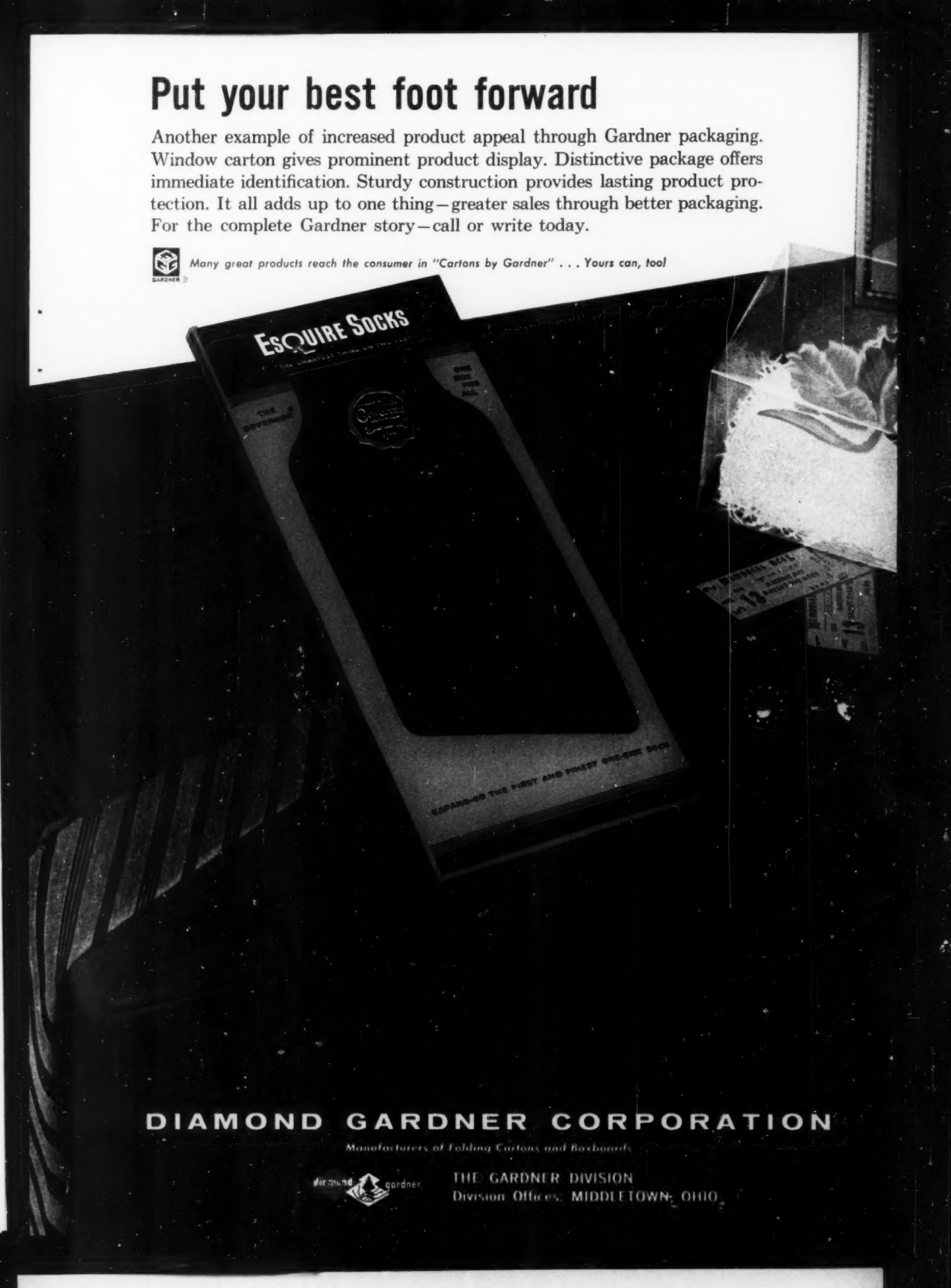
Many great products reach the consumer in "Cartons by Gardner" . . . Yours can, too!



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Manufacturers of Folding Cartons and Boxboards

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THE GARDNER DIVISION
Division Offices: MIDDLETOWN, OHIO

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Featured in this issue . . .

The subtle strategics of in-store display

Contrary to the general belief that self-service selling is inexorably crowding display material out of retail stores, packagers today are actually spending more than ever before to persuade the shopper to reach for one brand in preference to another. The key to point-of-purchase success is in quality; with display space at a premium, store owners are keenly selective as to the materials they will use. A successful display piece must be planned unselfishly to the retailer's advantage and it must be geared to do a specific selling job. This all calls for careful, long-range planning on the part of packagers' management. For a complete analysis of this problem, including an evaluation of the five different basic types of in-store displays,

Don't miss "The Strategy of Display," p. 87

The search for an effective polyethylene overwrap machine

In this third article of a series about polyethylene as an overwrap material, MODERN PACKAGING discusses the problem of perfecting equipment that will feed, fold and heat seal this film as efficiently as machines now handle cellophane. The fact that this limp thermoplastic material is now the lowest-cost transparent film is causing packagers to demand machinery that will enable them to take advantage of polyethylene's newly realized potential and growing advantages as an all-around packaging film. But improvising and engineering alone are not likely to produce the needed machinery. Rather than modifying existing equipment, the more practical approach open to manufacturers may be to throw out all established principles, then design and build a new machine from the ground up—based on fresh research into the handling and sealing of all thermoplastics. This forward step may result in the development of high-speed machinery suitable for handling *all* soft plastic film, not just polyethylene.

Read "What About Polyethylene?" No. 3, p. 116

Thermoformed plastics: the future is limitless

Transparency and sparkle . . . conformability . . . flexural strength . . . adaptability . . . economy . . . sales appeal. These are the advantages that in five years have carried blister, skin and contour packs from their obscure beginnings to high-speed production consuming 9,000,000 lbs. of plastic sheet annually. And the future of this infant supplying industry appears almost unlimited. With mechanical advances coming rapidly, the thermoform is now on the threshold of precision, high-speed production that will result in greater effectiveness as well as greater economy. There are limitations, to be sure, but those packagers who develop the know-how of packaging in thermoformed plastics undoubtedly will reap some of tomorrow's biggest merchandising successes.

Read this month's Supplier Industry Survey, "Thermoformed Plastics," p. 108

GF dresses up a packaging Cinderella

Only recently has industry become aware of the promotional power of colorful brand identity on institutional packages. A striking example is General Foods' bright new line of packages for Maxwell House coffees, aimed at converting the restaurant and hotel trade to brand consciousness. For example, brilliant new packages of machine-glazed white kraft with quickly identifiable background color panels replace the former brown kraft bags for the company's three leading coffee blends. When completed, the changeover will affect 54 different packaged units, including redesigned brew bags, lithographed

cans, shipping bags and corrugated containers. And engineering and technical improvements make these institutional-packaging innovations as economical as they are effective.

See "Bright Face for Institutionals," p. 106

How polyethylene film lengthens the storage life of fruits

Polyethylene box liners and covers are producing dramatic improvement in the storage and shipping life of such fruits as pears, apples, bananas and sweet cherries. But because selective control of moisture content and respiration is essential, fruit packers must specify the exact type of polyethylene for their product; slight differences in film permeability may spell the difference between success and failure. Storage or shipping temperature is another sensitive factor. A technical report on current practices and the future outlook by R. E. Hardenburg, H. A. Schomer and M. Uota.

Read "Polyethylene Film for Fruit," p. 135

Quick, clean opening for polyethylene package

Polyethylene laminations have always had one big fault as a packaging material: they are difficult to tear. But now Carnation Co. is repackaging its institutional Hot Cocoa Mix in individual poly-paper-foil pouches with a tear-string "zipper" concealed at the top. A gentle tug on the thread gives a clean-cut tear line with no stretching or distortion of the film. Significantly, the polyethylene used is more than one mil thick, which means the tear string may be equally effective on unsupported film. Another important point: the addition of the tear tape did not require any special packaging machinery. To find out more about how Carnation developed what may become a revolutionary improvement,

Turn to "A Tape That Tears Polyethylene," p. 94

Aluminum cans: How big is the breakthrough?

The first large-scale orders have catapulted aluminum cans into packaging's spotlight. Arthur D. Little, Inc., well-known research organization, forecasts for aluminum a 20% share of the 40-billion-unit can market within 10 years. So, apparently, there's a bright future in packaging for this lightweight, versatile metal. However, the Little researchers point out that supply, technical and price hurdles make uncertain any immediate and widespread switch from tinplate. What *is* certain is that aluminum cans are moving up; the big questions are *how fast?* and *how far?* For the up-to-date story, including all the pros and cons of what looms as one of the most significant packaging turns of the decade,

Read "Aluminum Cans—Prospects and Problems," p. 98

The big extra benefits of an efficient packaging line

When I. J. Grass Noodle Co. installed $80,000 worth of packaging-line changes last year, it expected production-cost savings, which totalled 30%. But the improvement—an automatic noodle-packaging operation that doubles line speed, cuts materials and labor costs, provides better product weight control, makes couponing easier and reduces space requirements—also has doubled production (from 15 to 30 bags per minute) and has resulted in straight-flow production, greater plant efficiency and increased product quality. The noodle line handles four bag sizes, encompassing four basic sizes of noodles. To learn more about the economies that can come from packaging-line efficiency,

Turn to "Spreading Economy," p. 128

Special runs on standard machinery

Sometimes careful attention to package design makes it possible to switch over packaging machines already in the plant, thereby mechanizing what would otherwise be a costly special run. Here's one way to turn the trick: For a special-run pack of two of its products, John H. Breck, Inc., redesigned the promotional boot so it could be run off on the same set-up machine used for its standard folding cartons—without having to make expensive changes in machine parts. The results: faster production and lower packaging costs.

See "Adapting to the Machine," p. 132

In miniature, major units are planned by General Foods' merchandising specialist, William Delaney (right), and his associate, S. A. O'Keeffe, Jr., prior to actual-size try-out units in test stores to determine effectiveness. Wire stands offer the retailer permanent units that may be changed frequently with "dress ups" for different promotions.

The strategy of display

Self service whittles point-of-purchase materials to basic units, but packagers spend more than ever on 'dress ups' to give extra push to the shelf package

Over the past few years there has been frantic effort among packagers to concentrate on package surface design as though it were the sole means of getting display in the modern self-service retail outlet.

The shelf, it was reasoned, was the only place left for display, so that the stand-out package had to do the whole job. And, more often than not, that is true.

Yet, today, there seems to be a realization that shelf after shelf of packages alone—no matter how effective individually—tends to become static; that orderly shelf arrangements need the interruption of additional display boosts to create the psycho-

5 ways to win display

SPECTACULAR

11-ft.-high tower holds 4,800 packages of Jell-O. May be seen anywhere in the store, acts as a reminder to shoppers, lends itself to island display. Packagers are rapidly adopting this technique for special promotions.

FLOOR STAND

Most widely used unit today is the floor stand of corrugated or wire. It lends itself to placement at gondola ends, for aisle display or near check-out counters. Colgate-Palmolive spends half its display budget on corrugated floor stands. Riser pieces may be changed for special promotions and limited-time offers.

logical excitement necessary to the market place.

The result is a widespread revival of interest in display techniques geared to mesh with a general movement on the part of store operators to make the supermarket, as well as other types of self-service outlets, pleasanter and more convenient places to shop, with greater ease of accessibility for the customer.

Contrary to general belief that self-service selling is crowding display material out of retail stores, display-supplying industries report that packagers are spending more than ever before to attract the shopper to that last arm's-length reach for one product in preference to another.

The difference is in quality rather than quantity. Stores are becoming more keenly selective as to the materials used. If it is to succeed, a display device must be planned unselfishly for the retailer's advantage and aimed with the accuracy of a rifle shot to do a specific selling job.

The trend is particularly noticeable in the growing demand for display materials (1) of better design and art treatment, (2) with more full-color reproductions, (3) making more frequent use of light and motion when it can be demonstrated that these embellishments add to the selling impact, (4) using constructions to meet the needs of today's store layouts and architecture.

The display-man's language is full of colorful new expressions to describe these constructions. He talks

of gondola hoppers, pole stackers, light thieves, shelf talkers, wobblers, danglers, mobiles, pylons and spectaculars.

The point-of-purchase display program has become an integral part of the over-all advertising and selling program—sometimes, as in the case of National Biscuit Co., planned a year in advance with specifically timed monthly and seasonal promotions of biscuits and crackers with related food items.

Long-range planning is imperative as more selling is done through large chain organizations whose management committees and buying offices must approve the display program as well as the materials put up in stores under their management.

No longer can a salesman approach the individual store to replace somebody else's display with his own. Scheduling is a head-office function with a time element as fixed as is media advertising.

Packagers are aware that there is little space for materials that do not accompany actual merchandise, that there is practically no chance of winning space for slow movers. And, in introducing a new product, they must be prepared to convince store managements that the media-advertising program is extensive enough to create the demand that justifies the space for point-of-purchase promotion.

They know, too, that the changing physical layouts of today's self-service outlets determine the types of materials that win acceptance and that, as these layouts become more standardized throughout the country, so do the materials that can be used.

In light of these trends, it may be helpful to evaluate some of the most common basic types of displays. Leaders in the food, drug, toiletries and hardware fields say that the most popular types today may be classified under five basic constructions. All other materials are regarded by display men as "dress ups" for these basic units, or attention getters for shelf arrangements.

PHOTO COURTESY EINSON-FREEMAN

Dressed-up market cart has all the advantages of the floor stand plus mobility for wheeling from back room, where it is filled, to any part of the store. Only disadvantage: it ties up push carts when they may be needed during rush hours.

PHOTO COURTESY SPOT MAGAZINE

For hang-up packages of both food and non-food items, the pegboard unit has won wide acceptance. Calavo unit gets dried fruits in the produce section where it aids in building impulse sales.

PHOTO COURTESY GAIR

Where counters have not been replaced by self-service shelving, the counter display piece is the most universally used unit to get merchandise within arm's reach of the shopper. E. C. Mullen Co. puts carded blister packs of squeeze tubes for lubricating oils in rhomboid display carton with corrugated insert.

The floor stand

Unquestionably, the most widely used unit in supermarkets today is the floor stand, made either of corrugated board or wire, that brings packaged merchandise within inviting reach of the passing shopper. Whether the common bin type, half-round or corrugated shipper, it fits logically into the supermarket requirement for convenient placement at gondola ends, for aisle display or for high traffic-

count store locations such as check-out counters.

Colgate-Palmolive reportedly spends 50% of its point-of-purchase budget on corrugated floor stands, which probably reach more than 100,000 retail outlets in a year, according to Harry Meeker, Colgate's advertising production manager.

In the floor stand, jumble arrangement of packages encourages faster selling, display men agree. Random arrangement apparently invites pick-up without fear of disturbing orderly stacking and is preferred for all types of packages which can be handled in this manner without damage.

The spectacular

A Jell-O promotion provides a good illustration of what display men call a "spectacular." The unit consists of an 11-ft.-high wire tower, filled with a dramatic display of 4,800 packages of Jell-O. Around the base at arm-reach level are placed hundreds of loose packages for shoppers to pick up. The tower spectacular (or pylon, as some call it) may be seen from all parts of the store. It lends itself to effective island arrangement, particularly in modern supermarkets with their high-domed ceilings.

So successful has been this Jell-O device, as well as others of similar construction, that manufacturers generally are rapidly copying the technique.

The cart wrap-around

A construction that has all the advantages of the floor stand, with the addition of mobility, is the colorfully printed wrap-around for the supermarket push cart, as illustrated by a Simoniz promotion, offering four packets of flower seeds free with the purchase of a can of Simoniz non-scuff floor wax. The decorated cart, jumble packed with packages,

To launch Ipana Plus, Bristol-Myers made available the line-up of display materials illustrated on this brochure. There are spectaculars and floor stands for supers, counter cartons, plus dress-up aids such as giant dummies, shelf strips, over-the-wire hangers—something for all outlets.

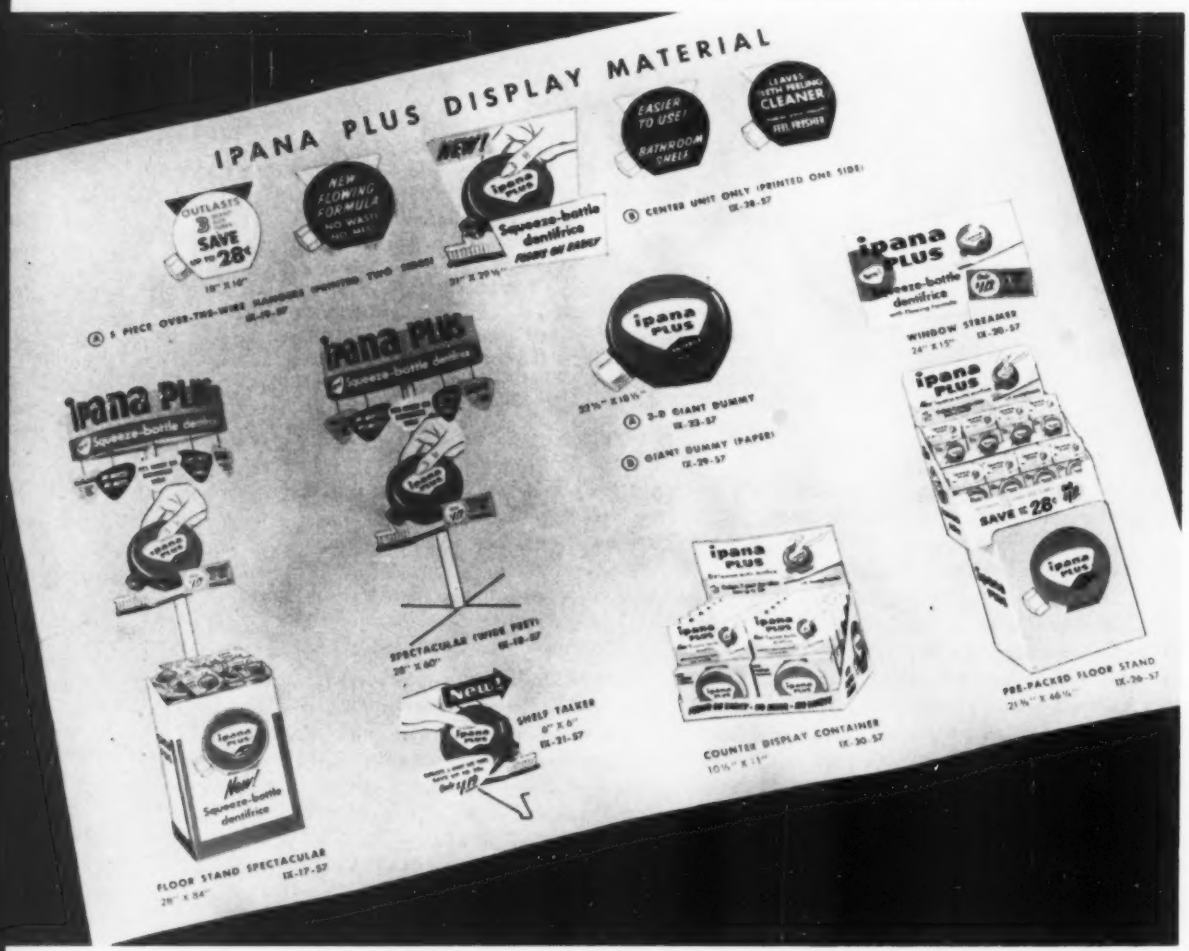


PHOTO COURTESY U. S. PRINTING & LITHOGRAPH

Light and motion are being used more frequently when it can be demonstrated that these adjuncts increase the selling impact. Flasher dramatizes the action of Sizl-Spray, the new pressure-packed, push-button barbecue sauce.

Dress ups for the unselfish, related-item promotion help retailers to sell produce and General Foods to sell Jell-O. Colorful banana-pudding posters, pole and topper for half-round floor stand, over-the-wire cut-outs provide dramatic variety for the special promotion.

may be wheeled to a strategic selling location anywhere in the store.

There is one objection to the practice, however, according to retailers: If adopted too extensively, it ties up push carts when every one is needed during rush hours.

Counter display

For the drug store, the hardware store and other outlets where the counter has not yet been entirely replaced by self-service shelving, the counter unit continues to be the most acceptable means of getting goods out front before the customer. Packagers who sell in all types of outlets never neglect carefully planned counter units—either display cartons or other constructions—as part of their over-all point-of-sale programs.

A good example is the counter unit illustrated here with the complete line-up of display material Bristol-Myers offered to introduce Ipana Plus, its new toothpaste in a squeeze bottle.

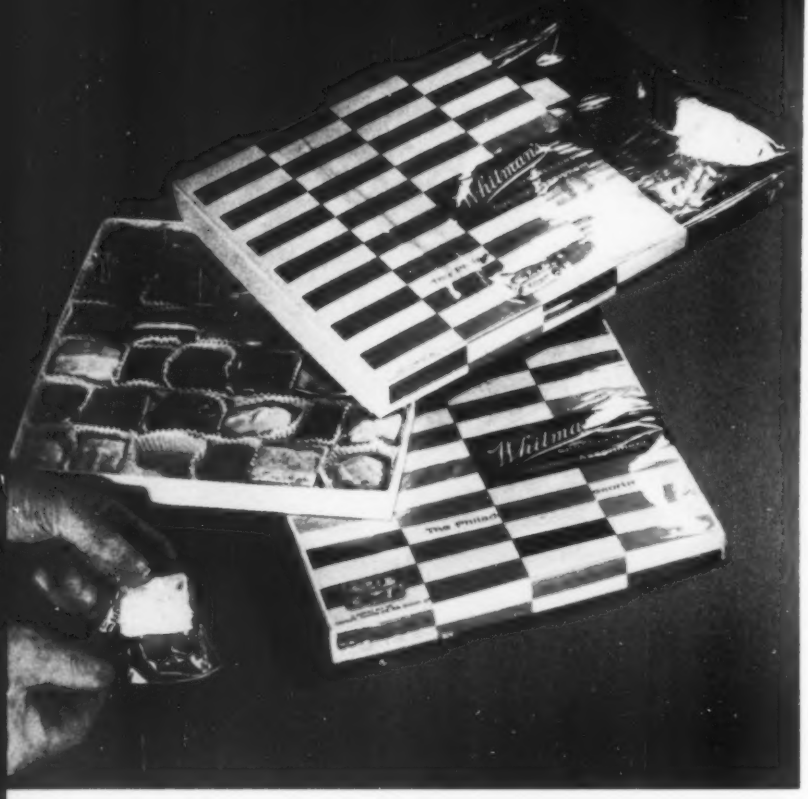
The pegboard

A familiar fixture in almost every outlet today for the hang-up package is the pegboard rack, which can be used extensively to get a large amount of merchandise—foods, toys, hardware, notions, soft goods, housewares—in a small amount of space. A pegboard unit supplied by Calavo Fruit Growers of California, promoting "Packaged fruit by Calavo," is a good example of how a functional, usable unit can win coveted locations. Calavo's pegboard has put dried fruits in the produce section, where they were not displayed before, building profitable sales through impulse purchases.

Dress ups

Increasingly more important to the display program are the dress-up materials that carry colorful selling messages. They include gondola hoppers and risers used above floor stands to suggest related items, to create appetite appeal, or to dramatize product features. They include changeable wraparounds for push carts and wire stands, permitting re-use of the same basic unit for more than one promotion. They include reminders and price promotions in the form of wobblers, shelf talkers and shelf strips—sometimes the only types of materials a manufacturer can get in a store to call attention to the shelf space devoted to his packages. They include over-the-wire hangers, mobiles and other devices often supplied as supplementary material for use as the retailer sees fit for over-all store promotions.

With modern store interiors better equipped with electrical outlets, there [*Continued on page 186*]



Inside and out, Whitman's summer and year-around assortments in its Philadelphia Store line are now guarded by polymer-coated cellophane. Individual inside wrappings give extra protection to confections particularly subject to drying. Outside overwrap not only boosts shelf life, but adds clarity and merchandising sparkle.

Broader market for

With polymer-coated cellophane's improved properties, Whitman's can market soft problem items in summer, get better package appearance the year round

It is fitting that the famed old candy firm of S. F. Whitman & Son, Inc., Philadelphia, which way back in 1812 was one of the first users of cellophane for packaging in this country,[1] should now be among the first in the candy field to adopt the new polymer-coated cellophane. For this improved cellophane with its saran-type coating not only adds new protection and sales appeal to a product line long noted for quality, but also has enabled the company to package some candies that were previously unmarketable on a national basis by reason of their sensitivity to loss of moisture.

Looking toward the future, Whitman is now experimenting with the use of an even newer form of polymer-coated cellophane to cut fogging of the package in frozen candies. Low-temperature storage (18 to 25 deg. F.) is coming into increasing use to prevent "bloom" on chocolates. And it is necessary to use a packaging material that will prevent the accumulation of condensed moisture when the wrapped candies are suddenly brought to room temperature for retail sale.

The technical reasons for using a polymer-coated film on candies are much the same as those that have led bakers[2] and other packagers to swing to this material: It has exceptional durability, dimensional stability and moisture-barrier properties, as well as extra clarity *and* merchandising appeal. For these reasons, the film is catching on at a rapid rate among confectioners, too.

[1]See "Whitman's Sampler," *Packaging's Hall of Fame*, MODERN PACKAGING, Jan., 1950, p. 90.

[2]See "Better Film For Baked Goods," MODERN PACKAGING, Jan., 1958, p. 124.

With candies, the moisture barrier assumes a role of greatest importance. And without the barrier properties of this film, it would be impossible for Whitman to distribute the nougat, fudge and Turkish-paste confections that bolster sales of candy during the summer months, when the appeal of chocolate products reaches a low ebb. Caramels, too, according to Whitman's, need the extra protection of this film because their fat content degrades the nitrocellulose coating on standard MS cellophane.

So successfully has polymer-coated cellophane fulfilled its mission on Whitman's summer line of boxed candies—Fancy Favorites and Caprice Assortment—that it is now being used as an overwrap for year-around boxed candies—Hostess Assortment and Peanut Clusters—and as a bag for Messenger Boys, which are foil-wrapped bars of solid milk chocolate. In addition, the company plans to use polymer-coated film for two new boxed assortments of nougats, fudges and jellies this coming season and for a new open-faced pack, Floral Mints.

Whitman put the polymer-coated cellophane through exacting tests involving severe conditions of high temperature and low humidity before accepting it as the answer to its packaging problem.

candies

The Whitman research report shows that nougats overwrapped in 300-gauge polymer-coated cellophane and stored at 90 deg. F. and a relative humidity of 25 to 30% outlasted the same product wrapped in plain cellophane by a ratio of nine to one and bested the nitrocellulose-coated cellophane by a ratio of four to one. The nougats in the polymer-coated film were still moist and acceptable after 63 days of this damaging storage.

Turkish pastes (soft, starch jellies) subjected to the same test became dry on the surface after only five days of storage when wrapped in nitrocellulose-coated cellophane. But, overwrapped in polymer-coated cellophane, says Whitman's, they withstood the accelerated storage conditions for more than three months with no signs of desiccation.

This testing period is extreme compared with normal storage conditions and it is obvious that shelf life of these perishable candies in polymer-coated cellophane is considerably longer under less-severe commercial conditions.

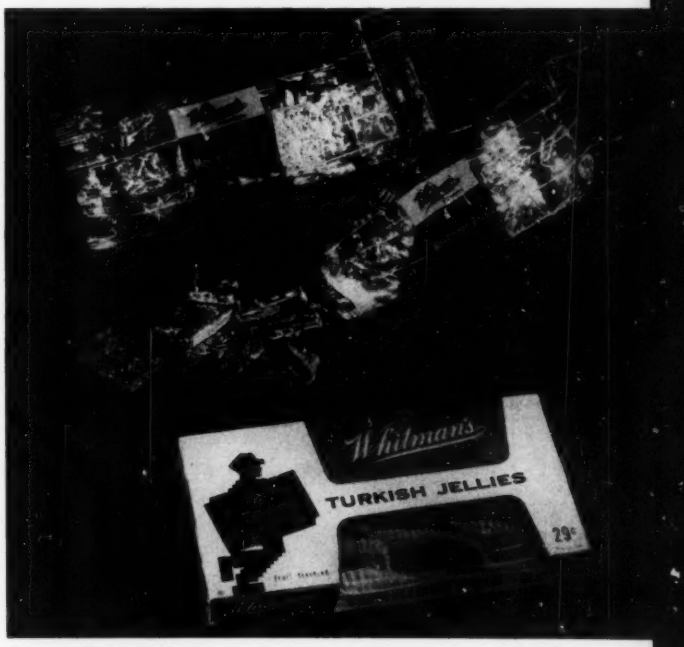
In addition to the other benefits, the company reports that the polymer-coated material has far less shrinkage and fewer open ends than regular cellophane. It has also been found less subject to "blush."

During the past summer season, the company concentrated its attention on packaging of its Philadelphia Store Assortment, comprising the Hostess and Caprice boxes. Virtually every candy in the Caprice box needs the special barrier provided by the polymer-coated overwrap. But in addition, seven pieces of nougat candy, particularly subject to drying, are given extra protection by individually overwrapping them in the polymer-coated film.

A similar situation exists in the year-around Hostess box, where in spite of the new polymer-coated overwrap, nine separate items are also individually wrapped in the special film.

In the case of the Messenger Boys, polymer-coated cellophane is used for a bag material as much for its clarity and sparkle as for its barrier property. The imprinted bars of solid chocolate are first overwrapped in gold-colored foil. And the coated film, which replaces a double-wall bag of MS cellophane, gives a superior view of this colorful product.

Supplies and services: *K-202 and non-fogging K-203 polymer-coated cellophane by E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*



Supermarket items, too, get extra see-through from polymer-coated cellophane. Window-boxed Turkish jellies and bagged, foil-wrapped chocolate bars, distributed in national chains, also need this special film's protective qualities.

A tape that tears polyethylene

Thread imbedded in 1-mil film coating of paper-foil-poly pouch is Carnation Co.'s answer to a common problem: how to provide fast, easy opening of a heat-sealed polyethylene package

Moistureproof polyethylene-coated aluminum foil has been outstandingly successful as a packaging material for a wide variety of hygroscopic products. But when used in sealed convenience packages, as in the packaging of individual food portions, it has had one serious drawback: the toughness of polyethylene makes the package difficult to open.

The Carnation Co. appears to have solved the problem. For its single-service Hot Cocoa Mix packette for the institutional trade, the company has switched from a standard pillow-type pouch to a new bottom-filled pouch of polyethylene-paper-foil construction which is revolutionary in that it has a tear string concealed at the top. To open the container, the user tears a corner, exposing a thread which is then pulled to give a clean-cut tear line across the folded edge of the envelope about 3/16 in. from the top. A notch is provided in the heat-seal area to facilitate start of the tear. This serves as a "grip" or "handle" for the string that follows.

Although in this case the polyethylene is in the form of an extrusion coating and the thread is applied as part of the coating, it is significant to note that the thread *does* cut through more than a 1-mil thickness of polyethylene. So it is reasonable to believe that it could be equally effective on unsupported film—thus breaking one of the biggest barriers to widespread use of polyethylene film as a heat-sealed, transparent overwrap.[1] Some work in this direction has already been done by Carnation's lamination supplier.

[1] See "What About Polyethylene?" MODERN PACKAGING, Dec., 1957, p. 98.

PHOTOS COURTESY WESTERN-SEALRS

Convenient opening to a degree never before provided in this type of highly protective lamination is achieved in this paper-foil-polyethylene single-service package of cocoa mix distributed to the institutional trade. The 3-lb. cotton thread tears easily through more than 1 mil of polyethylene without stretching or distortion.

For Carnation, the package innovation means a welcome boost for an already successful product. The individual-portion packages were introduced only a year and a half ago and their sales volume has been growing steadily. As a matter of fact, the relative newness of the product facilitated the package change. The original pillow-pouch packages had been produced by contract packagers as part of the initial marketing program. Volume had reached the point where Carnation was ready to install its own packaging line.

But it is important to note that addition of the tear-string improvement did not require any special packaging machinery. Material is received in the usual roll form with the thread already imbedded in the polyethylene coating. Carnation is now producing the product on new but perfectly standard

New Complete

HOT COCOA MIX

Just Add Water!

HOW TO MIX:

To serve hot—just empty this envelope into cup, add hot water, stir lightly and serve.

To serve cold—empty this envelope in 6 oz. glass, add ice cold water, stir lightly and serve.

Instantly ready to drink with delicious, rich flavor; complete with all the natural B-vita-mins, protein, minerals of milk.

U.S. PAT. NO. 2,726,070
OTHER U.S. AND FOREIGN PATENTS APPLIED FOR
PACKAGE PAT. APPLIED FOR

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Carnation

INSTANT

Hot Cocoa Mix

DELICIOUS COLD, TOO!

NET WT. 1 OZ.—INGREDIENTS: Nonfat dry milk, sugar, cocoa, emulsifier added, salt, vegetable stabilizer, vanillin (an artificial flavor) and other flavorings.

CARNATION CO. DISTRIBUTOR, LOS ANGELES, CALIF., U.S.A.

Carnation

INSTANT

Hot Cocoa Mix

DELICIOUS COLD, TOO!

NET WT. 1 OZ.—INGREDIENTS: Nonfat dry milk, sugar, cocoa, emulsifier added, salt, vegetable stabilizer, vanillin (an artificial flavor) and other flavorings.

CARNATION CO. DISTRIBUTOR, LOS ANGELES, CALIF., U.S.A.

envelope forming-filling-sealing machines at its plant in Oconomowoc, Wis.

The tear-string technique can be applied equally well to pillow-type pouches as well as to any other polyethylene-laminate container. In fact, Carnation made several trial runs on pillow pouches with the same tear string. In the case of pillow pouches, however, the string ran down the side of the package. The company switched to the end-filled pouch primarily because of the added convenience to the user of opening the bag at the narrow end.

Carnation's development program had its start more than a year ago, when the company's supplier of polyethylene-aluminum foil laminations suggested a joint development program based on a hand-written suggestion submitted by an employee in the material-supplier's plant. Why not, the man asked, make polyethylene-laminate packages easier to open by putting a tear string in the polyethylene itself?

It was a good and well-rewarded suggestion, but it was not easy to put into effect. To work, the tear string would have to be incorporated inside the laminate. This meant that it had to be laid down as the laminate was formed, adding a new factor to an already complex and sensitive operation involving highly specialized machinery and careful control.

Laminations such as those used in the Carnation package are actually made in two steps. The first is a thin polyethylene-bonded lamination of printed paper and foil. This stock is then fed through a machine that extrudes a continuous coating of polyethylene resin on what will be the inner face of the finished package. In the case of the Carnation lamination, this polyethylene layer has a thickness of one mil.

The tear string is incorporated during this second step. Patent applications covering both the package and the process are pending. An intimate bond is established between the string and the polyethylene coating. When the string is pulled back on itself, it neatly tears the aluminum foil and paper laminates, at the same time—by tearing its way out of the polyethylene film—disrupting its continuity. If the film is not cut completely through, it is at least weakened so severely that it gives way without the usual stretching and distortion that characterizes polyethylene when it is torn.

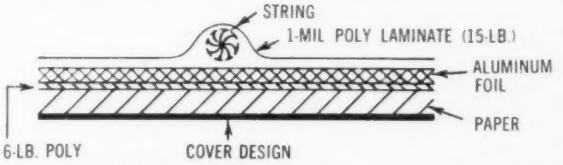
The lamination used in the Carnation package is made up of 25-lb. pouch paper, 6-lb. polyethylene, 0.00035-in. aluminum foil and 15-lb. polyethylene bonded into rolls 10 in. wide and 18 in. in diameter—enough for 18,000 envelopes. The string is laid down the center so that when the roll is fed into the packaging machine and formed into end-filled pouches, the string will be in the fold across the top (which is at the bottom during these standard operations).[2] Sides of the packages are heat sealed and cut before filling, as is the bottom after filling. Machine capacity is not reduced by the tear-string feature. Normal rated speed of the machine, according to the manufacturer's literature, is 110 to 115 pouches per minute. The [*Continued on page 192*]

Supplies and services: *"CZIP" tear-string laminated material by Crown Zellerbach Corp., Western-Waxide Div., 2101 Williams St., San Leandro, Calif.; packages formed, filled and sealed on automatic machines manufactured by Bartelt Engineering Co., 1900 Harrison Ave., Rockford, Ill.*

[2]See "Header First," MODERN PACKAGING, Jan., 1957, p. 126.

New package (right) is bottom-filled pouch, heat sealed on three sides and folded on the top, which contains tear string and directions for opening. Former pillow pouch (left) with no tear string had to be cut open.

HOW TEAR STRING IS IMBEDDED IN POLYETHYLENE



Mechanism of tear is shown diagrammatically. String tears from inside out, going through successive layers of polyethylene, foil, polyethylene and finally paper.

COURTESY WESTERN-WAXIDE DIV., CROWN ZELLERBACH

Material has tear string imbedded across middle of 1-mil polyethylene coating on inner side for Carnation Instant Hot Cocoa Mix packages. In pouch making, the material is folded along the dotted line, then other three sides are heat sealed in filling operation. A notch which is later applied at the arrow permits the user to tear up and across for quick opening.

ALUMINUM CANS

Suddenly, aluminum cans are beginning to roll. Not just laboratory or experimental runs. Nor timid testing in limited markets. Rather, it's aluminum cans in the multimillions and for big-volume products. Years of curiosity and development have given way to large-scale production. Firm orders by Esso Standard Oil for at least 35 million quart oil cans[1] and by Kraft Foods for 5½ million cheese shakers[2] give aluminum-can fabricators a tremendous production run to exploit.

Reflected in the outpouring of these shiny cylinders may be one of the most significant packaging turns of the decade. With motor oil and foods the first big users, aluminum will have a small but respectable piece of the can market immediately and should boast an expanding share in the near future.

What does this mean to other packagers? Is tinplate's top position threatened? Or will price or supply bottlenecks merely check one or the other? By what methods are aluminum cans produced? What are their advantages and disadvantages?

These critical questions for packagers are tackled in a new survey on aluminum cans by Arthur D. Little, Inc., the results of which are disclosed for the first time in this article. Prepared at this well-known Cambridge, Mass., research organization by members of its industrial economics and evaluations staffs, the report leads to these striking deductions about aluminum cans:

▸ Aluminum should capture about 5% of the 40-billion-unit can market in the next three to five years, may win up to 20% in the next 10. However . . .

▸ Cost is a many-sided question. Currently, an aluminum can *with equal rigidity* cannot, the analysts say, be produced as cheaply as a "tin" can. However, Kaiser has shown that it is perfectly feasible to *deep draw* an aluminum can with walls only two-thirds as thick as those of the conventional 9-mil tinplate can; whether these "thin walls" are sufficiently rigid for any wide range of products remains to be determined by further product experience. With *impact extrusion* (generally regarded as potentially the lowest-cost method), it takes 13.4 cents worth of aluminum to produce the same number of cans with comparable strength (13-mil wall) as 10 cents worth of 9-mil tinplate. *Conventional three-piece* aluminum cans perhaps will be able to compete only if there is complete scrap recovery of the metal. The future will depend largely on the relative price trends of raw aluminum and steel. Meanwhile . . .

▸ Shipping-weight advantages of aluminum cans are a consideration, but will be to some extent offset if there is a need for thicker walls and more effective anti-corrosion and compatibility coatings. Yet . . .

▸ Aluminum is inclined to attack tinplate's position at the moment because the former is in substantial oversupply and a 45% expansion of primary aluminum capacity is now under way. But . . .

▸ An incontrovertible block to a sudden major switch is over-all aluminum supply. In 1956 the total U.S. primary-aluminum supply was about 300,000 tons less than the amount of metal required

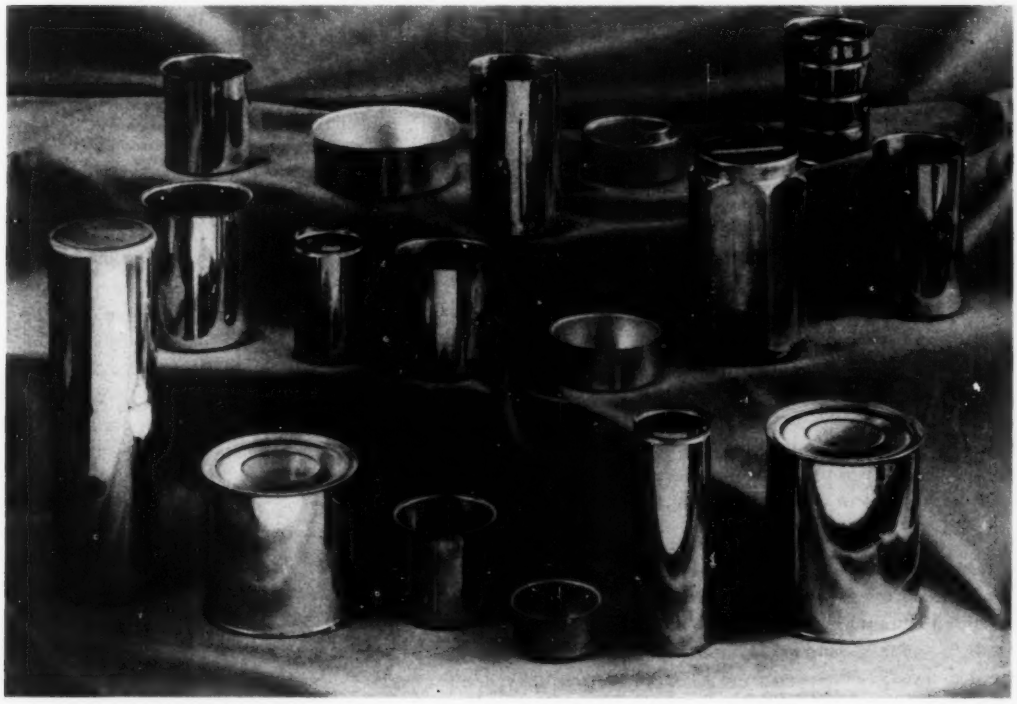
[1] See "Aluminum Moves into Oil-Can Business," MODERN PACKAGING, Nov., 1957, p. 232.

[2] See "Aluminum Cans for Kraft," MODERN PACKAGING, Nov., 1957, p. 119.

Three-piece can, fabricated from Reynolds aluminum sheet is being made by can companies on conventional lines with slight modifications. Esso will use from 35 to 60 millions of these this year. J. Louis Reynolds, executive vice president of Reynolds Metals Co., shows how cemented side seam permits uninterrupted lithography.

—prospects and problems

Fabricators hope to exploit competitive break of first big orders.
But they face supply, technical and price hurdles
that make uncertain any immediate, widespread switch from tinplate



Current and potential shapes of aluminum cans. This Kaiser array indicates wide variety commercially possible. Most of these cans are deep drawn. In the front row is a pair of three-piece cans with lids. Shallow cans are manufactured for the U.S. Air Force.

if all cans used in the U.S. had been made of aluminum.

Thus, tinplate has a formidable position in supply, price, share of market and known capabilities. But for alert packagers, the authors of the Arthur D. Little survey—George B. Hegeman and Bruce M. Lane—see significant implications that depend on relative price shifts of the two metals. With a narrowing cost differential and new improvements in fabrication, the aluminum can may move into broad commercial use and competition with other types of packaging materials a lot faster than even the current breakthrough indicates. What follows is taken directly from the Hegeman-Lane survey.

Fabrication techniques

Present plans for the production of aluminum cans involve three fabricating techniques. They are: conventional fabrication, deep drawing and impact extrusion.

Conventional fabrication—Two major can producers, American Can Co. and the Can Div. of Crown Cork & Seal Co., are using regular can-making techniques to produce conventional three-

Cylinders and flats are in this variety of aluminum-can shapes offered by Continental Can Co. Types are (1) two-piece drawn, (2) three-piece open-top, cemented side seam, (3) purse-size extruded aerosol, (4) larger extruded aerosol, (5) the drawn oblong hinge-cover box and (6) the drawn two-piece can.

piece cans from aluminum sheet. They have contracted with Reynolds Metals Co. to produce a minimum of 35 million uncoated oil cans of this type for Esso during the next year. Reynolds, as prime contractor, is supplying the two companies with aluminum sheet for fabrication and will collect scrap cans for remelting. Because Esso will pay Reynolds the same price as for "tin" cans, it appears that Reynolds will absorb any cost differential to establish aluminum as a competitive can material. To provide sufficient rigidity, wall thickness of these cans will be from 10 to 20% greater than that of typical tinplate.

Deep drawing—Kaiser Aluminum & Chemical Corp. is forming the can body in a single motion from an aluminum disk. These containers have thin wall (5 to 6 mils) and are being used by Kraft for its grated-cheese shaker and by Air Reduction Co. for a two-part friction-fit can for welding electrodes.[3] Reynolds for some time has produced a shallow-drawn square aluminum container, used by Vita Food Products, Inc., of New York for packing salmon.

Impact extrusion—Victor Metal Products Corp. will utilize this technique, similar to that used to form the familiar collapsible metal tube. To obtain sufficient strength, these cans are expected to be 12 to 14 mils thick, compared with 9 mils for "tin" cans. Contrasted with an initial investment cost of around $1,000,000 for conventional can-making equipment, impact-extrusion facilities cost $100,000 to $300,000.

Continental Can Co., second largest can producer, has announced that it will produce aluminum cans by all three methods: drawing, extrusion and conventional fabrication from sheet.

Several other companies, including the Aluminum Co. of America and the Adolph Coors Co., a Denver brewer, are experimenting with various techniques for using aluminum in can manufacture.

Markets

An accompanying chart graphically indicates the end-use pattern for all metal cans; food products clearly dominate the market. Of the major food items listed, aluminum is generally compatible with beer, coffee and evaporated milk. Aluminum cans represent a potential threat in these market areas, particularly in the canning of beer, whose shelf life is reportedly extended. But low operating margins in the food industry will delay acceptance of aluminum in that field.

Specialty products with high margins (for example, aerosols) may take advantage of aluminum's merchandising appeal. Some 400 million aerosol units were sold in 1956 and this number will more than double by 1960. In Europe, where tinplate is expensive, aluminum aerosol containers have been used for many years. Europeans have also developed effective coating systems that overcome many corrosion problems. The lack of comparable coating technology in this country has been a major stumbling block to the widespread domestic use of aluminum aerosol cans.

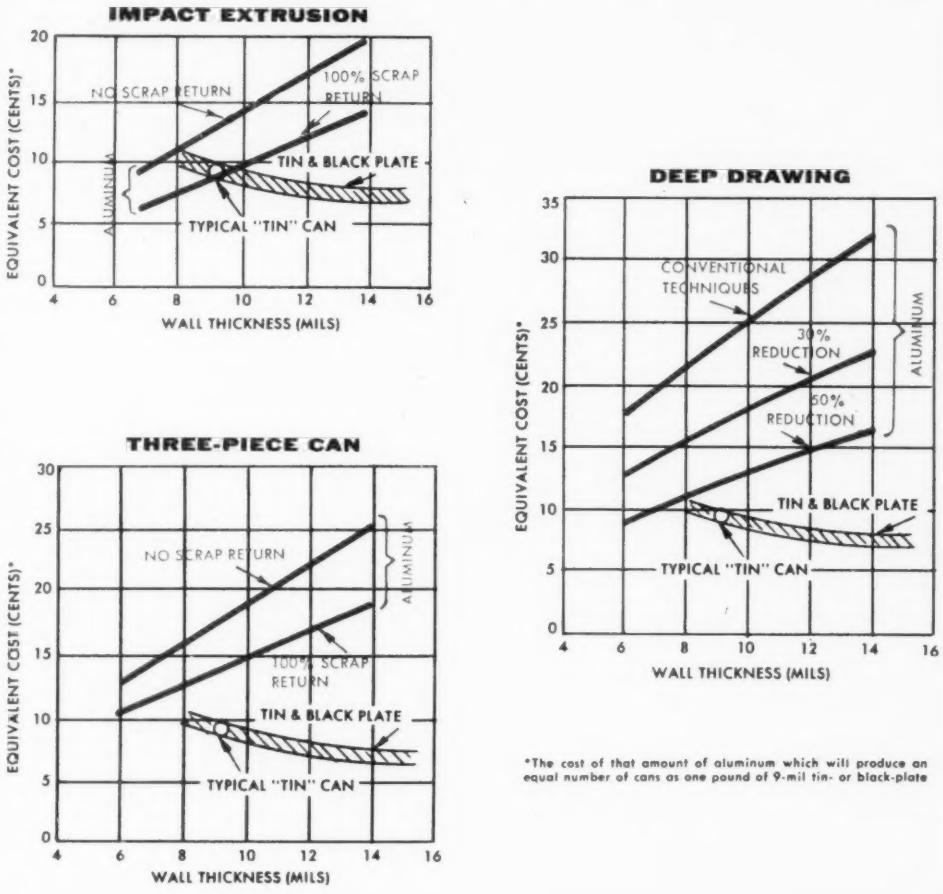
Outside of the food and aerosol field, aluminum cans will compete for markets involving closed-loop distribution systems (e.g., oil and antifreeze sold by gasoline stations). The future of aluminum cans for this market will depend on the efficiency of the Reynolds-Esso scrap-recovery system. Esso station

Varied shapes are possible with aluminum, whether container is impact extruded or deep drawn. Individual design tastes can be satisfied with walls that are bulged, ribbed or fluted. A product's sales appeal may be enhanced by this freedom from the "tin"-can stereotype.

PHOTO COURTESY ALUMINUM LIMITED SALES, INC.

[3] See "Aluminum 'Pop' Cans," MODERN PACKAGING, Dec., 1957, p. 213.

How aluminum and tin-plate costs compare for cans made three ways



*The cost of that amount of aluminum which will produce an equal number of cans as one pound of 9-mil tin- or black-plate

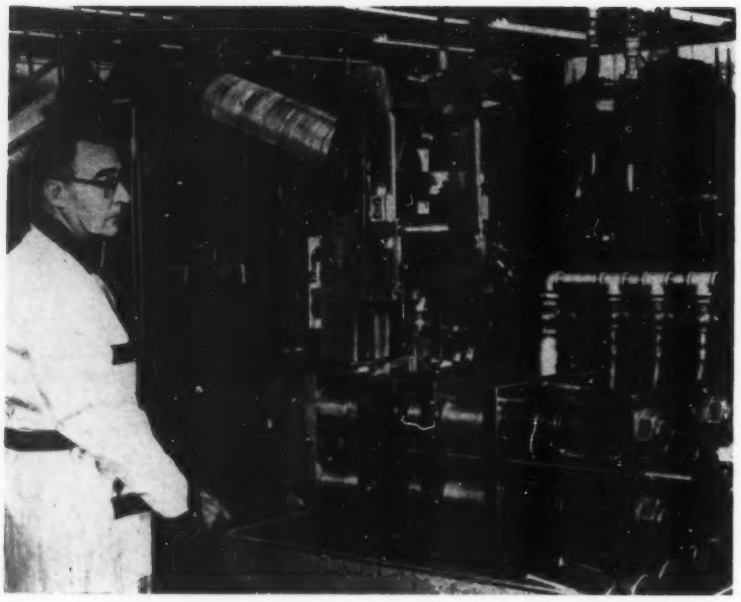
operators will collect the cans in a drum beneath a mechanical crusher and receive scrap value from Reynolds, which will arrange for collection of the used cans.

Because of their lower strength, it does not seem, according to the Little researchers, that thin-wall, deep-drawn aluminum containers will be exactly comparable with "tin" cans. However, these containers may be used where the product itself provides rigidity, as in frozen foods and some canned meats or seafoods. They may also be suitable for tear-open-type containers such as are now used in Europe to package soluble coffee.

A substantial market potential exists where the aluminum can will compete with such other packaging materials as plastics, paper and glass.

Also important is the sizable reduction in the final shipping weight of the package. Considering these market factors and potentials, aluminum could reasonably capture up to 5% of the total can market within the next three to five years. In terms of today's markets, this percentage would represent a consumption of some 100,000 tons of aluminum per year.

Over the long haul, widespread acceptance will depend on a decreasing price differential between aluminum and steel. Although freight savings and lower initial investment cost from conventional



Doubleheader press feeds blank disks from above through the cupping, ironing and bottoming dies. In the single stroke of a punch, this Kaiser press automatically produces a seamless, one-piece aluminum can body.

equipment will help speed acceptance, it is unlikely that more than 20% market penetration is possible within the next decade.

Economics

Important in determining the potential for aluminum cans is comparative raw-material cost. At current prices, an aluminum can with equal performance characteristics cannot be produced as economically as a "tin" can. Typical 9-mil tinplate is 10 cents a pound, while blackplate of the same thickness costs 8.8 cents a pound.

In calculating the relative cost of aluminum, it is important to consider both the lower density (one-third that of steel) and the thicker wall required to give comparable impact strength. The value of aluminum scrap produced during fabrication has been included, but tinplate scrap has not been considered significant. The cost of such processing steps as forming, degreasing, coating and lithographing are similar for aluminum and tinplate and therefore have been omitted.

To facilitate the discussion of raw-material costs, comparisons are based on the cost of the amount of aluminum which will make the same number of cans as are produced from 1 lb. of 9-mil tinplate or blackplate. Prices are those posted for type 1100 aluminum alloy.

In the *impact-extrusion* process, round slugs stamped from a continuously cast sheet are fed into the extrusion press. This process will produce cans with a wall thickness of 12 to 14 mils, giving a structural strength comparable to 9-mil "tin" cans. By using continuous-casting techniques, Victor Metal reports that slugs will cost about 37 cents a pound.

The first accompanying price chart (page 101) shows the comparative raw-material costs at varying wall thicknesses for this process. With a value of 37 cents per pound, 18.4 cents worth of aluminum will produce the same number of cans having comparable strength (13-mil wall thickness) as a pound of 9-mil tinplate, which costs 10 cents. Complete scrap recovery of the 13-mil aluminum can would reduce the comparative per-pound cost by 5.4 cents, to a minimum of 13 cents for aluminum. There are, however, limited opportunities for 100% scrap return, since few packaging organizations are set up to recover scrap from the end user.

In *deep drawing* steel and brass, reduction in wall thickness is obtained. However, in the drawing of thin-wall aluminum shapes, such a reduction is generally not practiced. Modified deep-drawing techniques, permitting a reduction in wall thickness, may prove to be an economical method of producing competitive aluminum cans.

Although the price of aluminum sheet used in the calculations for these charts is based on open-market quotations, an integrated operation may be able to realize substantial savings and therefore would be able to produce at a cost lower than that shown in the second price chart.

With *conventional can-making* techniques, the thickness of the purchased sheet is carried through to the finished can. Since this method precludes any reduction in wall thickness, it does not appear to be so competitive as impact-extrusion or deep-drawing techniques. Complete scrap recovery reduces raw-material costs by 23%, as shown in the third price

chart. Although this saving still seems insufficient to produce a competitive aluminum can, two factors help justify the cost of adapting existing conventional equipment: (1) higher production rates, (2) lower capital expenditure required for conversion when compared with the installation of new equipment for deep drawing or impact extrusion (for conversion details, see below).

Although it is clear that at present aluminum cans generally cost more than "tin" cans, it is possible that more rapid increases in the price of steel will gradually improve aluminum's competitive position. Taking into account both projected prices and possible developments in alloy technology, it will be five years or more before aluminum is competitive on price alone.

Even if aluminum prices were more competitive with tinplate today, the aluminum can could make only gradual inroads into the market. One important reason for this is the quantity of aluminum required. Approximately 4,700,000 tons of tin and blackplate were consumed by the can industry in 1956. To make this same number of cans would require more than 2,100,000 tons of aluminum—about 300,000 tons more than the total 1956 U.S. supply of primary aluminum. Therefore, despite the present oversupply and the 45% expansion of primary aluminum capacity now under way, the supply of aluminum in the near future will not sustain this end use unless other markets are sacrificed.

The present heavy investment in can-making equipment will also retard the acceptance of aluminum as a raw material until economics become more favorable. Beyond the merchant can manufacturers, 14% of total can production is accounted for by about 30 captive producers, which include such major consumers as Campbell Soup, the Texas Co., Sherwin-Williams, Carnation and Pet Milk.

Can characteristics

In the fabrication of aluminum cans, conventional processing techniques must be altered. Magnetic controls must be converted to mechanical systems and the handling of finished cans is complicated by high surface friction, lighter weight and low resistance to denting. New handling techniques include the use of pneumatic tubes to move cans between units.

The limited product compatibility of aluminum in comparison with tin is also expected to retard its acceptance. Many acids and salts corrode aluminum. In some cases anodizing (with 4-6 microns of aluminum oxide) or coating with a chemically inert resin improves compatibility. However, since pinholing and discontinuities in the coating cannot be completely avoided, neither of these techniques is completely effective. In addition to increasing compatibility, anodizing enhances the appearance of the can's exterior. This merchandising advantage is difficult to assess in terms of cost.

Another advantage of aluminum is the variety of shapes possible from impact-extruded and deep-drawn processes. This freedom from the stereotyped "tin"-can shape will have added sales appeal.

An important feature of aluminum in food packaging is that it imparts little or no odor or taste to such products as beer, coffee and evaporated milk, with which it is generally compatible uncoated.

George B. Hegeman (seated) and Bruce M. Lane are authors of the aluminum-can survey for Arthur D. Little, Inc. Both men are Massachusetts Institute of Technology graduates.

RAINBOW OF

Old and new. Fisher Flouring Mills gave up the conventional paper bag for the crisp, overwrapped carton on its flour products following the success of its cereal in a similar container. Although colors used for each product are markedly different, a close family tie-in is maintained by the distinctive trademark, the silhouette of a mixing bowl and spoon, and a blue-and-white checked cloth which appears in all of the home-product illustrations.

"Hot pink" for flour? This and even brighter colors are used now in the bold redesign of a line of variety flours that have been switched from conventional packaging in bags to overwrapped cartons by Fisher Flouring Mills Co., Seattle, Wash. Full distribution begins next month.

The unusual pastel color treatment and packaging is part of a special effort by Fisher to build an individual personality for each product. Yet great care has been taken also to establish strong symbols that tie the separate flours into a close family relation. And usefulness of the products is emphasized with full-color illustrations of the foods that can be made with the contents. These illustrations are backed up with simple recipes requiring use of the entire contents of the package. The recipes are presented in a large type face on the sides and back of the 2-lb. packages.

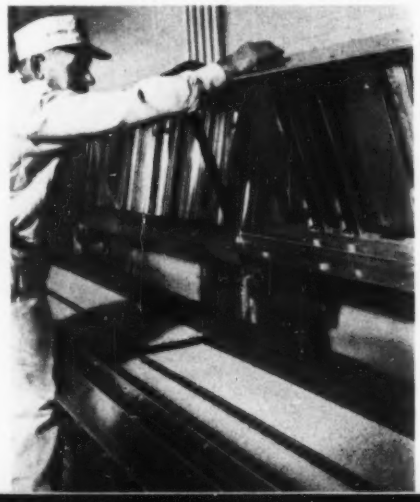
The warm colors—pink for whole-wheat flour, lilac for rye flour, blue for cracked wheat, green for graham, white for buckwheat and two kinds of yellow for wheat germ and yellow corn meal—reach a peak in the striking fire-engine red employed to set off Fisher's standard, all-purpose flour. The latter is packaged both in an overwrapped carton and in regular 5- and 10-lb. paper bags. It is given special design treatment because of the varied packages in which it appears and because it is displayed normally apart from the variety flours on the grocery shelf.

Strongest symbol in the new design is a white mixing bowl and spoon, shown in silhouette at the lower right side of the variety-flour packages. Following the concept of basic use that is stressed in all elements, this symbol contains a list of recipes using the product.

A more subtle family tie is a blue-and-white checked cloth, used in all of the illustrations. On five packages, this pictured material takes the form of a napkin that lines a basket filled with foods made from the product. On the buckwheat-flour and wheat-germ packages, the gingham check is shown as a tablecloth. Because wheat germ is used primarily to sprinkle over cereals and stir into juices and milk, the illustration on this package contains a bowl of cereal and wheat germ prominently centered in the panel, with a glass of juice "cued in" on the left.

In most food stores, the variety flours in this assortment stay together as a family on the shelf facings. Even wheat germ—the specialty product of the group—is shelved with the rest, in many

Flour sterilizer is used for four products to replace bin fumigation. Radiant heat is supplied by infra-red units installed in the trough cover above the product and by conventional heating elements below the trough. Time through the 25-ft. vibrator is 30 sec. and the product itself reaches a temperature of 160 deg. F.



FLOUR CARTONS

West Coast miller switches from conventional bags to overwrapped boxes and pioneers the use of bright colors and food illustrations in an eye-catching line of variety flours

instances. And some grocers are now displaying the entire line in a secondary position in dietary sections.

The distinctive company trademark—"Fisher's" in white script over a red spot—has been used for nearly 50 years and is retained in the new design. It is featured prominently in the upper part of each package.

Because the all-purpose flour package competes only with conventional white designs, the bright red boxes and bags are considered enough of an eye stopper. Consequently, illustration is omitted in favor of a larger logotype and more prominent product designation. Here, the red trademark spot is set off from the similar [*Continued on page 210*]

Supplies and services: *Printed overwraps by Stecher-Traung Lithograph Corp., 274 N. Goodman St., Rochester 7, N.Y.*

Blaze of colors distinguishes these variety flours packaged by Fisher. Pioneer for the unusual color treatment is "Zoom" whole-wheat cereal (second from right on upper shelf), which was developed to its present yellow-and-blue design over the past 15 years. Unique color and package for a standard all-purpose flour is the 2-lb. red carton at left on the lower shelf. On all packages, a red spot backs up the company name.

COLOR PLATES COURTESY FISHER FLOURING MILLS

New white stock imparts brilliance to colorful packages that are a physical expression of a high-quality product and invite display next to coffee-brewing equipment. Distinctive package designs and identifying color panels give quick recognition to three favorite Maxwell House coffee blends wherever the packages are seen.

Bright face for institutionals

New interest in good design for non-consumer packages is illustrated by General Foods program for Maxwell House coffees as put up for the restaurant trade

Standout design for retail shelf packages is axiomatic, but until recently nobody seemed to care much about the appearance of industrial and institutional packages.

Suddenly, it seems, all industry has become acutely aware of the promotional power of colorful brand identity on the package that goes only to the production line or the restaurant chef and is demanding the best design skills to produce such packages.

So essential, apparently, did the Institutional Products Div. of General Foods Corp. consider stepped-up, product-line identity that it commissioned its consulting industrial designers—one of the nation's top firms—to redesign its entire line of packages for the hotel and restaurant trade. The over-all objective was to create a family identity for all the varied products made by General Foods for institutional sale.

A striking example of the first results which were achieved is the group of new institutional packages for the company's Maxwell House coffees.

Chief aims were to offer packages so attractive they would:

- Be the physical expression of the high quality of the coffee being contained.
- Be suitable for display where over-the-counter customers could see the packages and know immediately the coffee being served.
- Make the institutional owner, manager, chef or person brewing the coffee aware of the fine product being used.
- Provide shipping containers that would assure instant recognition for each of the three Maxwell House blends.

Now completed, the change-over affects 54 different packaged units, including redesigned coffee bags, lithographed cans, shipping bags and corrugated containers, filled and sealed in five roasting plants throughout the country.

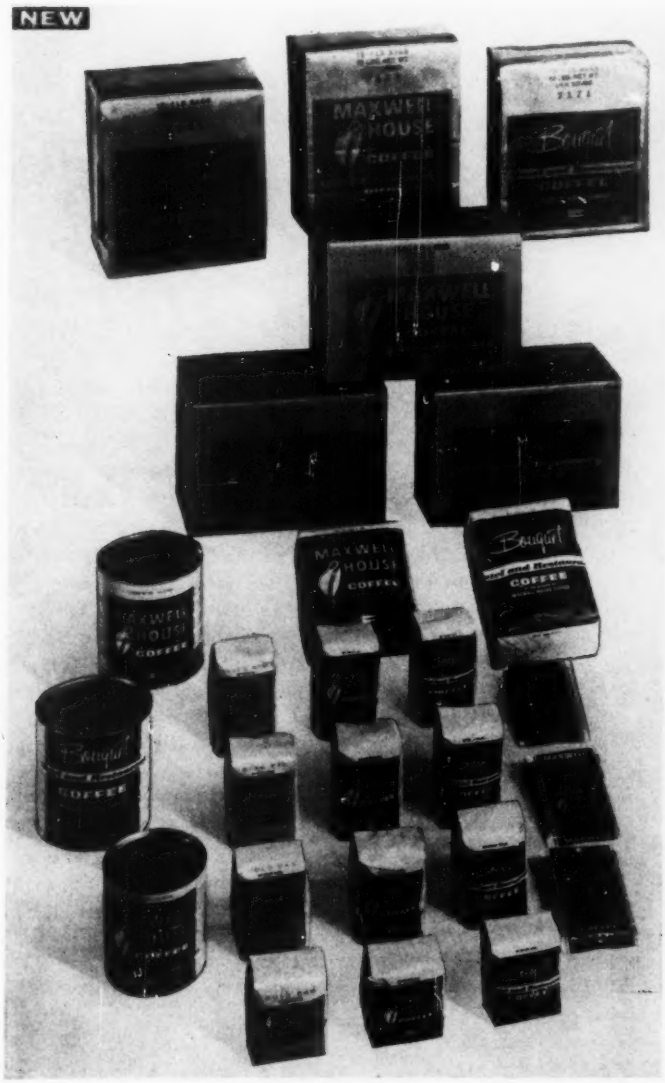
In addition to brilliant new packages that give new prominence to Maxwell House, the project

demonstrates the outstanding economies and improvements that sometimes can be achieved when working with a design firm that delves deeply into engineering, merchandising and technical aspects to come up with desired surface effects.

Studies made together with the paper and bag manufacturer resulted in the development of a white, machine-glazed paper stronger than the natural kraft paper, with finer finish and generally better appearance at only a slight additional cost. Ingenious adjustments to existing bag-closing equipment, that now folds the tops of the bags to the back instead of the front, give neater and more attractive appearance to the printed faces of the bags.

Once satisfied that the slightly more expensive white stock could be used and the label area improved, the designer was able to proceed with the quickly identifiable background-color panels that distinguish the three fine blends—all from Maxwell House: blue with yellow [*Continued on page 210*]

Supplies and services: *Design program by Walter Dorwin Teague Associates, 415 Madison Ave., New York. Coffee bags by Thilmany Pulp & Paper Co., Kaukauna, Wis. Cans by American Can Co., 100 Park Ave., New York 17, and Continental Can Co., Inc., 100 E. 42 St., New York 17. Shipping bags by Union Bag-Camp Paper Corp., 233 Broadway, New York 7, and Equitable Paper Bag Co., Inc., 45-50 Van Dam St., Long Island City 1, N.Y. Corrugated containers by International Paper Co., Bagpak Div., 220 E. 42 St., New York 17; Union Bag-Camp Paper Corp.; St. Joe Paper Co., Houston Container Div., P.O. Box 19006, Houston 24, Tex., and Fibreboard Paper Products Corp., 475 Brannan St., San Francisco 19.*

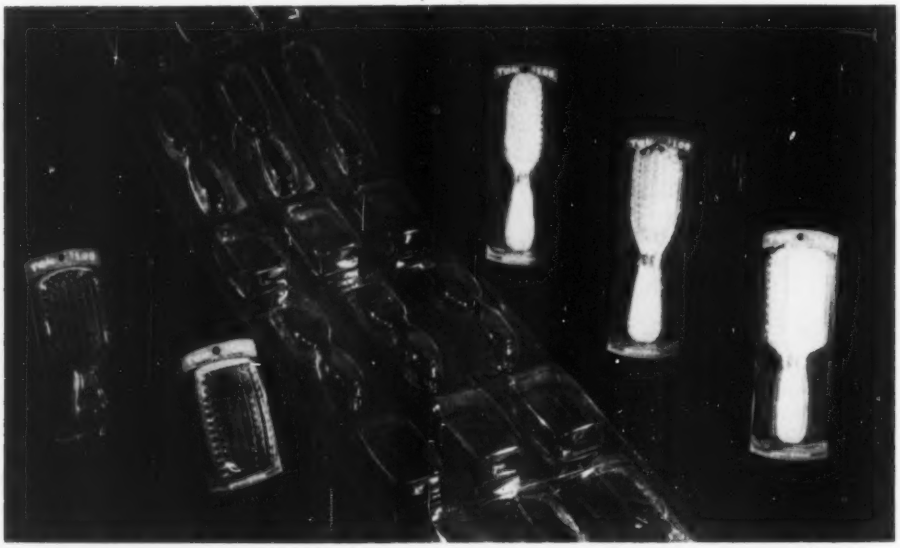


Some of the 54 packages involved in the project. Drab brown kraft bags (above) are things of the past. Cans also are getting the face-lifting treatment. Family design and identifying colors follow through to shipping bags and containers.

13

SURVEY OF A SUPPLYING INDUSTRY

THERMOFORMED



Mass production is exemplified by continuous thermoforming of butyrate contour packs for hairbrushes, working from roll stock. Units are cut apart, brushes inserted, then a printed card placed in the slide tracks. Note hang-up holes for display. *Thermoforming by Plaxall, Inc.*

Firmly unitized and highly visible in this skin package are all the parts for a small hardware item which formerly had to be gathered by the dealer from boxes or bins. This type of thermoformed package is sweeping the hardware field.

PHOTO COURTESY BAKELITE

Thermoforming of plastic sheet is one of the most dramatic of all the promising new areas in packaging.

Picture a field virtually as broad in scope as flexible-film packaging, but offering rigidity and formability in addition to transparency and you can understand why the future of this young, $12.6-million supplying industry appears almost unlimited.

Recently, thermoforming has been termed "the sleeper" of the plastics industry. However, this suggestion of surprise and better things to come is true only because much pioneering has gone on, many bonanzas have been found and a certain number of flops have already occurred.[1]

[1] See "Vacuum-Formed Plastics," MODERN PACKAGING, Feb., 1954, p. 108, and "The Rush to Formed Plastics," March, 1955, p. 79.

In five years blister, skin and contour packs have mushroomed from their obscure job-shop beginnings to high-speed production consuming 9,000,000 lbs. of plastic sheet yearly

PLASTICS

"Blister," "skin" and "contour" packs, thermoformed from sheet plastics, are now subjects of top interest, but as recently as 1950 the terms were unknown in the vocabulary of packaging.

The word "thermoforming" itself is of even more recent coinage. It is now generally accepted as covering both vacuum and pressure forming (both of which require the application of heat and pressure) and including the whole range of package types from a thin film "skin" on a board to the more elaborate pre-formed blisters and contours, many of which now make up all-plastic packages. The package itself is becoming generally known as a "thermoform."

Thermoforming has risen fast in packaging because it is rich with benefits that merchandisers need today and will need even more tomorrow. Together these advantages provide a unique and powerful combination. They are:

1. *Transparency and sparkle*—to display the product and attract sales. Color, opacity and printing are available.

2. *Conformability*. Thermoformed sheet plastics are supreme in this characteristic. Few limitations are imposed on size, shape or detail; the packager has a freedom in blister and contour thermoforming not found in any other type of rigid packaging.

3. *Flexural strength*. This characteristic is like a built-in muscle. It means that all sorts of working and gripping features can be devised. Thermoformed plastic sheet can be made to hold a product, or to provide such dispensing features as slide tracks, snap locks and hinges.

4. *Adaptability*. The choice of materials is wide and growing wider. Because of this and the protective properties inherent to plastics, thermoformed packs are among the most versatile packages you can find.

5. *Economy*. The equipment, the dies (if any) and the process are relatively low in cost. Some blister and skin packs cost as little as two cents apiece. Even elaborate, high-cost thermoformed containers as used for instruments, gifts and personal products are competitive and economical for their purpose.

6. *Sales appeal* and dealer convenience. The thermoform neatly combines the features most essential in packaging for today's merchandising requirements. It secures the product so that it cannot be lost or damaged, yet puts it fully on view for close examination by the shopper. The backing card or folder usually used with the thermoform provides a billboard for promotional and informational copy that can be taken in at a glance along with the product itself—and it has the very important advantage

A milestone in thermoformed packaging is this fully automatic machine now going into use in General Electric plant for high-speed packaging of flashlight bulbs. Blisters are continuously vacuum formed in a moving 15-in. web of acetate sheet. Bulbs, fed from hoppers, are automatically placed in blisters, which are then automatically closed with heat-seal paperboard backing and units perforated or cut off. Production speed of the unit is rated at 300 packages per minute. *Machine by Packaging Industries, Ltd.*

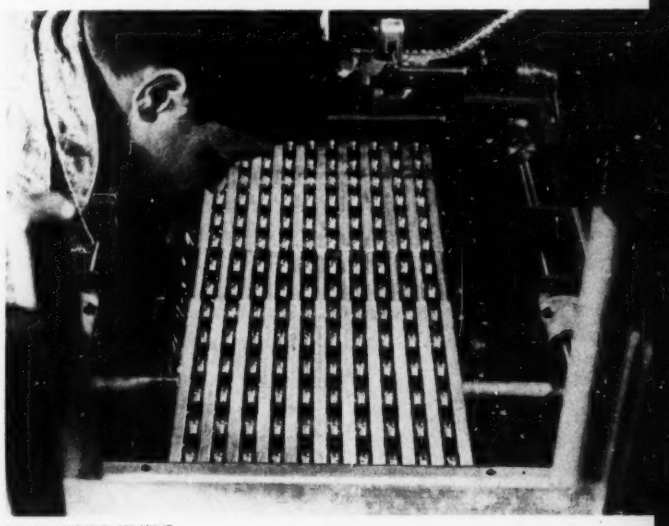


PHOTO COURTESY CELANESE

Intriguing innovations appear endless in thermoforming, which has the unique ability to reveal, yet protect—at low cost. For this large-volume premium offer, the spoons are skin packaged, locked in with an undercut feature and grommeted to cards. *Thermoforming by Shaw-Randall Co., Inc.*

to the dealer of giving manageable size to items which would otherwise have to be stowed out of sight in bulk and in bins, to be sold only—and often unprofitably—by clerk service. The latter advantage explains why thermoforms have swept so prominently into hardware stores. Many carded packs are perforated for display on wire racks.

With mechanical advances coming rapidly, the thermoform is now on the threshold of precision, high-speed production, which will result in even greater economy and effectiveness. As one spokesman for the thermoforming industry puts it; "Almost the same degree of accuracy can be had as in forming metal and in die cutting paperboard."

Very clearly, tomorrow's thermoforming of sheet plastic packages will range from simple job-shop operations to high-speed lines—300 or more units a minute—filling and sealing plastic packages either in a contract plant or in the packager's plant. Some of these lines will use and assemble pre-formed components; others will form packages continuously from roll stock. And intriguing, though not yet practical in packaging, is the prospect of heading the line with a plastics extruder, providing a continuous operation from raw material to finished, filled and sealed package.

The industry

Because it is new and developing in several different directions, there is no well-defined industry of package thermoforming. For the same reason there are no clear-cut figures as to unit or dollar volume, other than the volume of plastic sheet known to be going into thermoforming.

The leading influences behind thermoforming, which may be considered as making up an industry, include (a) the manufacturers of plastic sheet, (b) the manufacturers of thermoforming equipment and (c) contract or custom thermoforming shops. The latter group is frequently involved in non-packaging work also, producing plastics parts as big as refrigerator doors, and its interest in packaging is difficult to identify. Also, there is the tendency for large packagers to do their own thermoforming in their own plants—a trend which seems likely to grow.

The forming of sheet plastics under heat and pressure had its beginnings in the late 1930s. Important progress followed with the war-born techniques for vacuum forming contour maps. About five years ago thermoforming began its rapid climb into the field of packaging.

To understand thermoforming it is necessary to keep in mind that this process is confined to plastics in sheet or film form. In packaging terminology, sheet plastic is any gauge more than 3 mils in thickness; anything under 3 mils is classed as film. For the purposes of this discussion, "sheet" will be used as covering the entire range of plastics for thermoforming, although many skin packs now use thin film on a backing board.

In the thermoforming equipment, the sheet is

softened with heat, while pressure forms it to the contours either of a die or mold, or of the actual product to be contained. Such mechanical assists as plugs, rings and clamps are often used.

The simplest type of equipment employs atmospheric or vacuum pressure at about 15 lbs. per square inch. This is vacuum forming. Although the method is basically easy, for high speed and accuracy, very complex machines are needed and have been developed. Vacuum forming's forte is versatility in handling different materials, gauges and forming requirements with minimum cost in dies and change-over time.

Where greater force is needed for higher speed and more precision, air or hydraulic pressures (up to 300 p.s.i.) are used. This is pressure forming.

Because the products of the two methods are similar in appearance, packagers tended to lump them inaccurately under the best-known term, "vacuum forming." To avoid this, MODERN PACKAGING suggested in 1956 that the term "thermoforming" (signifying heat plus pressure) be adopted as a general over-all designation.[2]

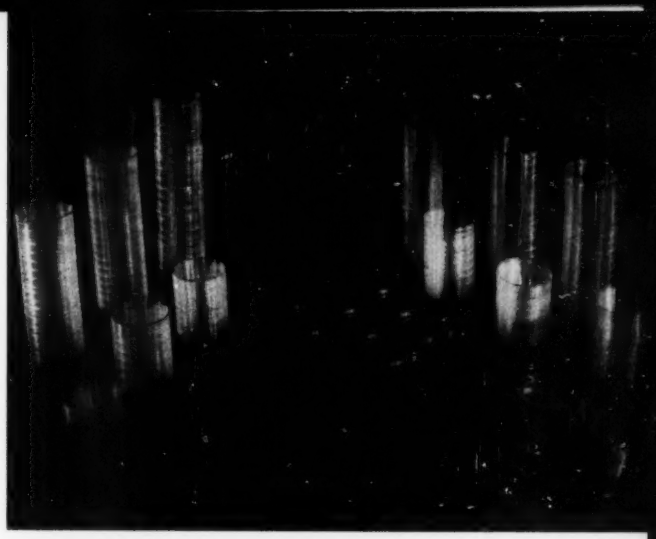
Nearly a dozen different plastic sheet materials can be used in thermoforming.[3] There are at least 16 manufacturers of vacuum-forming machines for packaging applications. At least two of the machinery makers have been in the field since its inception and have pioneered many of the successes in packaging as well as in forming techniques.

In 1951 thermoforming consumed an estimated 5,000,000 lbs. of sheet plastics. Last year the total came to about 90,000,000 lbs., an estimated 10% of it for packaging.

As an indication of the relative importance of various materials, the following "guesstimate" breakdown of the 90,000,000-lb. figure is offered: polystyrene (all types), 45,000,000 lbs.; vinyl, 15,000,000 lbs.; acetate and butyrate, 10,000,000 lbs.; acrylic, 15,000,000 lbs., and other plastics, including polyethylene, 5,000,000 lbs. Of these, acetate looms the largest so far in strictly packaging uses. Appliances, transportation and housewares have been—up to now—largest users of thermoformed sheet plastics.[4]

Over-all, there are some 700 custom formers; 87 of these are listed in the directory section of MODERN PACKAGING *Encyclopedia Issue* as specializing in package work. Most of the formers, according to one authority, are in the $25,000 to $100,000 sales-volume class. Only a few have an annual volume near the $500,000 mark or higher. About a third of the formers are in the New York area, but fastest growth now is said to be in the Midwest and on the West Coast.

[2]See "Thermoforming Has Arrived," MODERN PACKAGING, May, 1956, p. 95.
[3]See "Sheet Plastics for Thermoforming," MODERN PACKAGING *Encyclopedia Issue for 1958*, p. 435.
[4]See "Progress Report on Sheet Thermoforming," MODERN PLASTICS, May, 1957, p. 107.



Transparent lids of biaxially oriented polystyrene sheet are now thermoformed in sheet stock and stamped out at high speed. This low-cost process provides high visibility for dairy products and other items that are packaged in paper cups and containers. *Thermoforming by Plaxall, Inc.*

The package

These are the distinguishing features of the three basic types of thermoformed packages:

1. The *skin pack* uses thin sheet or film which is thermoformed directly about the product and seals it, usually onto a backing—eliminating mold costs and providing the skintight fit which gives the

Four ways to assemble thermoforms for informative selling are demonstrated by Wearever pens. At left, a slide-track blister held on card by die-cut flaps. Blister on large card is locked in place by a backing card. At right is a slide-track blister that dispenses refills through an aperture in back of card. In foreground is a formed plastic tray with transparent slide-track cover. *Thermoforming by Plastic Artisans, Inc.*

package its name. Skin packaging is done only by vacuum forming.

2. The *contour pack* is related to the skin pack only in the sense that it conforms closely to the contours of the product. It is pre-formed, often in multiples, over a mold or die rather than the product itself and it generally uses heavier, semi-rigid sheet stock.

3. The *blister or dome pack* differs from the contour pack in that the blister is a simple curved or angular shape, not conformed to the shape of the product, and hence is applicable to many different products within a given size range.

Self-sizing milk-bottle caps made of thin, opaque vinyl may challenge paper caps. Formed-in fluting has spring-like action that adjusts to and grips the mouth of a bottle. High-speed thermoforming operation now being geared up is designed for efficient, low-cost production.

Contour and blister packages, or parts, can be made by either vacuum or pressure forming.

So unsettled is terminology in this new field that not all authorities would agree on the above definitions, but they will serve for the purposes of this discussion.

In addition to the three recognizable categories, there is a fourth class, less well defined, in which might be grouped various thermoforms which have recently appeared in the form of boxes, trays, cups and other containers. This still-developing field has immense potentialities.

In addition, thermoformed platforms, dividers and similar accessories have become especially important in packaging because their contoured shapes, strength and special surface designs make them extremely versatile and highly functional. Preflocked polystyrene has made its appearance as a low-cost but luxurious contoured platform for such items as silver flatware, cameras, electric razors and the like. Thermoformed closures are a relative newcomer, but snap-on lids for round paper cups and containers, made of biaxially oriented polystyrene sheet, are already substantial in volume. And a producer of caps for milk bottles has recently installed facilities reportedly capable of turning out a million thermoformed vinyl caps a day—using a paper-thin opaque vinyl material of nontoxic formulation.

It is possible also to thermoform cups and containers with a deep draw. Packages of this nature are now on the market in Europe and one of the largest American manufacturers of paper cups has produced thermoformed cups from vinyl sheet which are said to be competitive with paper for use in vending machines and in other throw-away uses.

Displays, signs, package replicas, contour merchandisers and similar items are volume users of thermoforming. The design versatility afforded by this method has provided effects impossible to achieve by any other means. Added advantages are economy, virtual freedom from size and detail restrictions, and excellent strength and weathering characteristics.

Developments

Early in 1952 blister packs began to find favor.[3] The same year brought one of the first thermoformed sheet plastic packages, which is still one of the most advanced from a production-line point of view; this was the vinyl container for Kraft's "Portion Control" servings for jams, jellies, etc.[4] In 1953, U.S. Rubber introduced its vacuum-formed spherical container for Royal golf balls.[5] In 1954, Master Rule Mfg. Co. formed sheet around steel tape rules, using the product as its own mold. This was probably the beginning of skin-packaging, although heat sealing of the film to a card was not involved as in most skin packages.[6]

At this point, the rush was on and new developments turned up monthly and even weekly. Attachment methods showed unusual ingenuity and variety. Blisters were stapled, glued, heat sealed and even affixed to cards by a label- [*Continued on page 193*]

[3] See "Transparent Carding," MODERN PACKAGING, March, 1952, p. 200.
[4] See "Portion Control," MODERN PACKAGING, April, 1952, p. 90.
[5] See "Golf Balls in Contoured Plastic," MODERN PACKAGING, June, 1953, p. 120.
[6] See "Vacuum-Formed Plastics," MODERN PACKAGING, Feb., 1954, p. 108.

Bagged sheets

Prefabricated polyethylene packages eliminate unsightly seal points on former Springs Mills overwraps; provide neater-looking units with greater economy and efficiency

One of the most complex flexible-film packaging applications is that of handling the numerous sizes, styles and thicknesses of folded sheets and pillow cases.

Frequent changes to accommodate different dimensions have been one of the principal deterrents to general acceptance of fully automatic overwrapping. The problem is complicated further today by retailer preference for one-sheet units.

It is not surprising, then, that the household-textile industry has turned to the prefabricated transparent-film bag as the immediate solution to its problem.

Among the leaders in the use of this new technique is Springs Mills, Inc., New York, which has adopted a polyethylene bag with specially constructed gusset for all its sheets and pillow cases, and loads it with a semi-automatic bagging device that now seems to be widely accepted in textile-packaging operations.

According to Springs Mills, the prefabricated package has a number of advantages. It provides a neater package because (1) printed design is positioned more precisely, (2) the gusset assures trim, squared-off corners and (3) the single seal to close the bag eliminates three unsightly sealing points on the back of the former package necessary to secure four folds of a wrap.

The single-seal bag, the company says, also reduces human error in semi-automatic packaging, thereby assuring the quality appearance of the packages.

The bag packaging reportedly results in faster, more efficient packaging. Although actual figures have not been disclosed, the bagging technique apparently has gone a long way toward offsetting the cost of additional packaging material and labor necessary for the change-over from two-sheet to one-sheet packaging in the household-textile industry.

Procedures have been greatly aided by the use of the electrically operated bagging device which opens the bags with air blasts to permit easy loading of the product with two parallel arms that serve as loading horns.

Gusset opposite open end of bag provides neat, squared-off corners when bags are filled.

Supplies and services: *Gusseted polyethylene bags developed by Bemis Bro. Bag Co., 408 Pine St., Box 49, St. Louis, Mo., and supplied by Bemis, The Dobeckmun Co., 3301 Monroe Ave., Cleveland 13, Ohio, and Milprint, Inc., 1065 N. Holton St., Milwaukee 1, Wis. Bagging machine by Tele-Sonic Packaging Corp., 208 W. 27 St., New York 1.*

Single seal to close film bag eliminates the three seals required to secure folds of former wrap, leaving back area clear for informative data. Bags assure better positioning of design.

Flip-top box facilitates corsetry stock keeping

A "flip-top" folding box with an inner tray that becomes the take-home package is being used by H. W. Gossard Co., Chicago, to improve stockroom orderliness, ease inventory taking, cut wrapping costs and speed the movement of merchandise from stockroom to counter.

Currently used for the company's Answer brand foundation garments, the flip-top boxes are stacked ends out so the clerk can quickly ascertain size, color, style and other product data. To select a garment for try-on, the box is pulled out a few inches, its hinged end is lifted up and the tray containing the garment is pulled out completely. If the sale is completed, the tray—which has a center V-cut on each side and a scored bottom—is folded to form a compact, take-home box. A small strip of tape is used to seal the package. After removal of the tray, of course, the stockroom box may be discarded. If the sale is not completed, the tray may be returned to the stockroom box.

Supplies and services: *"Stockkeeper" cartons and trays by Chicago Carton Co., 4200 S. Pulaski Ave., Chicago 32.*

DESIGN HISTORIES

Heat-and-thaw trays in a frozen-food package

Dream Diets of Rochester (Minn.) is test marketing four-course frozen dinners with three consumer appeals built into the package. They are: (1) separate hot and cold foods in each package, (2) an accurate calorie count prominently displayed on the four-color waxed-paper overwrap and (3) preparation copy on the inside cover of the carton itself. The two aluminum-foil trays permit customers to defrost the salad and dessert while heating the meat and vegetable. The calorie count (275) encourages purchase of the product by weight-conscious people who nevertheless do not want to buy strictly dietetic foods. Finally, the inside-cover copy answers complaints by housewives that preparation instructions on overwraps are often torn and discarded when the package is opened. The design motif—a stylized weighing scale in black against an aqua background—is carried over to the inner components of the package.

Supplies and services: *Design by Robert Sidney Dickens, Inc., 908 N. Ernst Court, Chicago 11. Overwrap, cartons and lids by Marathon Corp., Menasha, Wis. Aluminum-foil trays by Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.*

Break-apart carton for clothesline

A way to offer customers their choice of two sizes of a product in one over-all package is suggested by this break-apart carton for Planet clothesline from Puritan Cordage Mills, Athens, Ga. The carton is comprised of two longitudinal sections, each holding 50 ft. of line. If the customer wants 100 ft., she gets the entire carton. If she wants only 50 ft., the carton is broken along its perforation line and the exposed rope is snipped in the middle.

In addition to serving as a carry handle for the double carton, the exposed section of rope allows customers to inspect the product without opening the package. Windows in each side of the two-in-one carton permit additional product inspection. Copy and illustrations on the facing panels of the individual sections of the perforated carton promote the use of clothesline for making stairway guards, tote-box handles and other household projects.

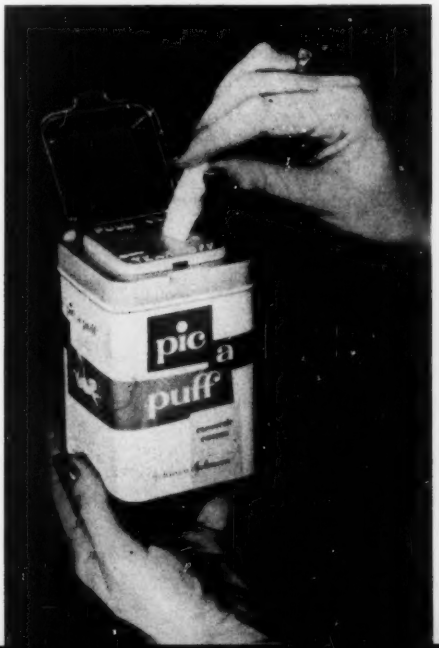
Supplies and services: *Carton and automatic-loading-machine design by Container Corp. of America, 38 S. Dearborn St., Chicago 3.*

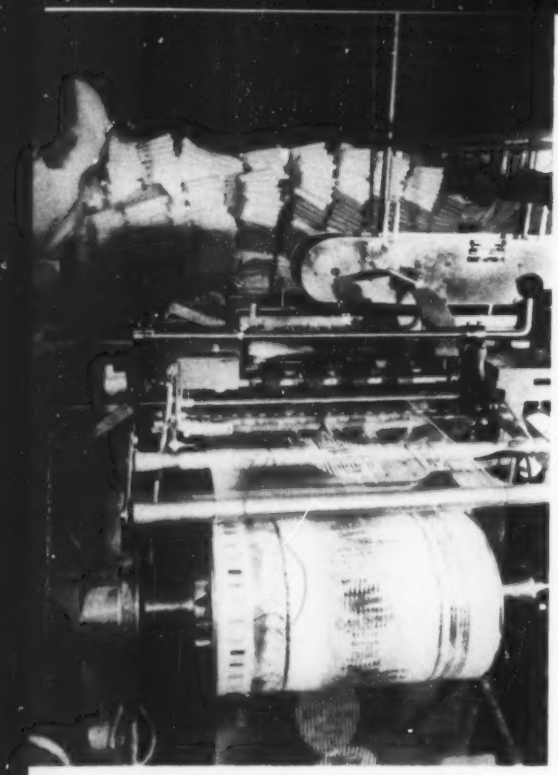
DESIGN HISTORIES

Convenient styrene closure for a metal can

A hinged polystyrene lid-and-dispenser-top combination adds the sales-making dimensions of convenience and cleanliness to Johnson & Johnson's metal container of "Pic-a-Puff" coiled cosmetic cotton. To remove the product, the user lifts the transparent closure, pulls out the desired length of cotton from an opening in the lavender-colored dispenser top and tears it back against the opening's serrated edge. A small amount of cotton protrudes from the opening for the next use. The remainder of the product inside the can is protected by the modified-styrene dispenser top. Special beading jaws secure the plastic attachment to the can, according to the company. The can is lithographed in six colors—white, blue, gold, red, black and flesh—in addition to lavender. Two sides carry the brand name reverse printed in white on a color strip. The other two sides illustrate household uses of the cotton.

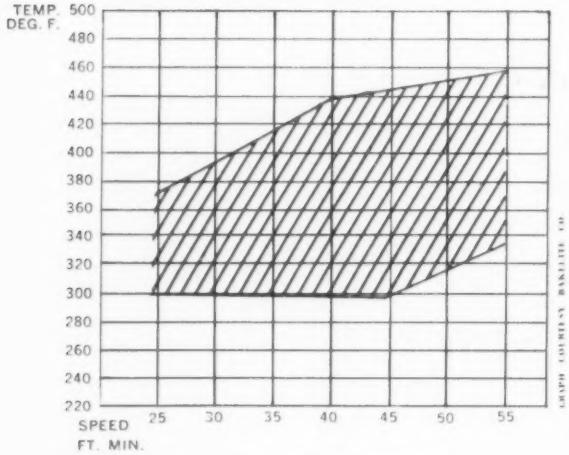
Supplies and services: *Metal can by Continental Can Co., Inc., 100 E. 42 St., New York 17. Hinged plastic dispenser-cover combination by Pyro Plastics Corp., Pyro Park, Union, N. J., using Monsanto's polystyrene.*





Actually working at Stayon Products in Greenville, S.C., overwrapping folded crib sheets in polyethylene film, this is one of the first polyethylene overwrap machines to reach packaging lines. Some of the problems in handling and sealing limp polyethylene film have been overcome. But speed is a relatively slow 35 packages per minute. *Machine by Hayssen Mfg. Co.*

FASTER SEALING SPEEDS REQUIRE MORE HEAT



Wide range of actual sealing temperatures at different belt speeds is shown by shaded area on this graph. Seals made in the lower range are peelable—to some extent. Those made at upper limit are weld tight and strongly resist opening. Film used was 1.5-mil treated polyethylene.

What about

In competition with cellophane as an overwrapping material, polyethylene film offers the odd combination of many better characteristics, a 9-cents-per-pound better price, but little use. The reason: machine problems to date offset almost every present or expected advantage.

To report how these critical problems are being solved, preceding articles in this series have analyzed the film itself, described its merchandising appeal as a package overwrap and explained why this has not yet been put to work. In this installment we observe what machine makers are doing in the face of growing demands from packagers for mass-production overwrappers using polyethylene film.

Whatever may be said about their past attitude toward the problem (and both packagers and film suppliers have said some unkind things), there is no doubt that packaging-machinery manufacturers are now seriously interested in producing machines that will take full advantage of polyethylene's newly realized potential as an all-around packaging film.

They know now that polyethylene no longer is to be considered strictly a bag-making material to be handled by specialists on special machinery, but that its far bigger future lies in bundling and overwrapping applications, because it has become not only the lowest-cost, but also the longest-lived transparent film. It possesses great strength and has adequate clarity and sparkle for the great majority of overwrap uses.

They are beginning to realize that there is an enormous market, ready and waiting, for automatic overwrap machines—not in a few converters' plants, but in literally thousands of packaging plants all over the country—if only this versatile thermoplastic polyethylene film can be made to feed, fold and heat seal as efficiently as cellophane.

The engineering of a machine to accomplish this purpose is not a simple matter, nor is it likely to be solved by engineering knowledge alone. For the methods of handling and sealing polyethylene film are dictated by the fundamental chemistry of the material. It will undoubtedly take the cooperation of research chemists and other technical experts to solve all the problems.

From the machinery manufacturers' standpoint, there are two basic approaches:

1. They can modify the original designs used for

THIRD OF A SERIES

polyethylene?

Though machine manufacturers are moving to meet the demand for polyethylene-film overwrappers, the hard choice between modifying and building anew is still to be faced

existing overwrap machinery, applying recognized and fundamental sealing and handling principles that now form the basis for all this non-thermoplastic overwrap machinery. This approach, which requires only the adaptation of several mechanisms to the properties of polyethylene film, has the advantage of relatively low cost in developmental time and money. It also carries the possibility—now little more than a faint hope—that existing overwrappers already being used for paper and cellophane may be changed over in the packager's plant to handle polyethylene, thus saving packagers the expense of buying all new wrapping equipment.

2. The second approach—by far the more expensive and difficult—is to launch an all-out investigation into the special sealing and handling requirements of thermoplastic film. From these data, a polyethylene overwrapper would be built from scratch—probably employing entirely new mechanical and sealing techniques specifically suited to the material. Many film, resin and machinery experts believe that in the end this approach will be the only practical one.

Progress

Despite the obstacles, there are signs of progress along both lines.

Virtually every manufacturer of overwrap machinery is attempting to redesign some type of standard machine to handle polyethylene. Two such modified wrappers are now actually in limited use and more should be appearing within a few months. All of these machines will be of the modified type.

So, it is significant that at least one manufacturer, Oliver Machinery Co., reports that it has decided to design an overwrapper that will be brand new from the floor up and will employ new film-feed and heat-sealing concepts.

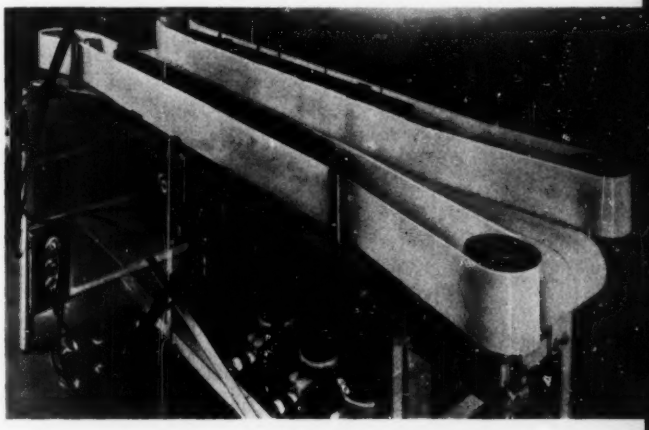
As far as packagers are concerned, they are torn between the desire to have a fundamentally new machine and to save money by modifying existing equipment. But the demands of packagers for a real solution to the problem are becoming insistent. One major food packager—the Quaker Oats Co.—has taken the unusual step of underwriting a full-scale research program at the Pennsylvania State University, taking the approach, like Oliver, that completely new principles are required.

This is all in the future. To date, the actual operating results of engineering development on polyethylene overwrappers are not impressive. The two makes of machines now operating commercially that can claim to handle polyethylene successfully are both still in the proving stage and somewhat limited in speed and range. Not more than a half dozen of these machines are in actual use.

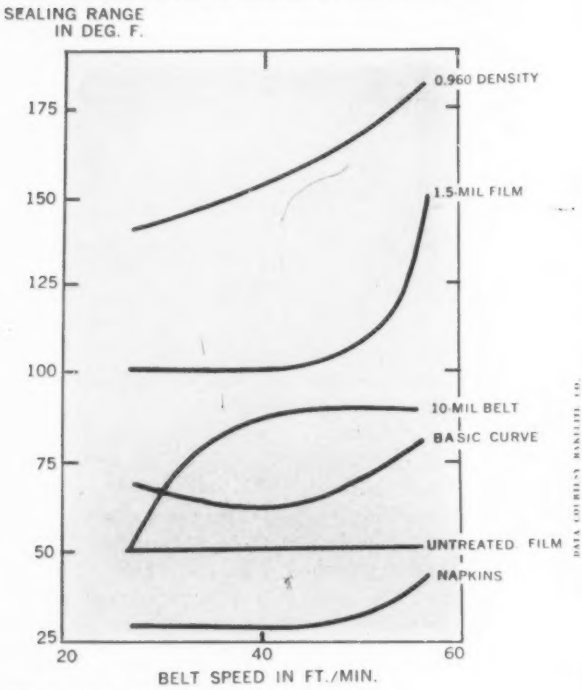
And it is important to note that although these newly built machines are basically the same as cellophane overwrappers of the same makes now operating in packagers' plants, the modifications are such that it will probably not be feasible to try to convert existing machines.

Also, no machine has yet been marketed that can

Experimental machine, developed in Bakelite laboratories, has thrown a great deal of light on mechanical and film variables in polyethylene heat sealing and has also helped point the way to practical commercial applications.



INTERPLAY OF FIVE FACTORS IN SEALING POLYETHYLENE FILM



Effect of sealing speed on five film and machine variables, with respect to sealing-temperature range. Basic curve shows results with a carton overwrapped with 1-mil treated polyethylene film of 0.923 density, using 5-mil heating belts. The other curves show the effects that are produced by changing one variable at a time.

efficiently overwrap cartons in polyethylene, although one company reports that it is prepared to supply such a machine when there is a call for it.

However, in one phase of the machine problem, definite strides have been made. Through the combined efforts of machinery manufacturers, resin suppliers and film converters, the problems of feeding and folding polyethylene film have been greatly reduced by means of such stiffening devices as fingers and air jets, and with positive film-carrying mechanisms.

Much more critical and complex is the problem of sealing. Conventional heat-sealing systems used with other films generally are unsatisfactory for polyethylene.

This film sticks to exposed sealing plates and scuffs when pulled past these sealers. It must be protected constantly and held under rigid control throughout the entire sealing operation. Also, polyethylene has poor thermal conductivity, which prevents heat from penetrating through multifold thicknesses—as required in overwrap folds—to the sealing faces where it may be needed.

Because success of this film as an overwrap material depends on effective multilap sealing, most research and development work has centered on this problem.

Experimental sealer

Some pioneering work in this area has been done by the Bakelite Co., which started an intensive study of polyethylene heat sealing four years ago. Although it has not developed the last word in sealing equipment—and means only to suggest solutions, since it does not manufacture machinery—Bakelite has produced a workable laboratory unit that proves the feasibility of heat sealing multifold overwrapped polyethylene. At the same time, it has cleared up many mysteries concerning the behavior of polyethylene in these applications.

Bakelite's experimental sealing unit consists of a three-belt system—two side belts and a bottom carrier made of glass cloth coated with Teflon plastic. The unit has interchangeable sealing plates and a variable-speed drive to measure the effect of a number of mechanical and film variables on the final polyethylene seals.

Two sealing-plate arrangements have been used:

1. One, two or three sealing plates, each 6 in. long by 4 in. high, have been employed on each side to determine the sealing-temperature range for total plate lengths varying from 6 to 13 inches.

2. One sealing plate, 18 in. long by 4 in. high, has been used on each side to gauge the effect of film variables on sealing temperature and range.

Water-cooled plates, which chill the hot seals so that they will peel from the belts without puckering, sticking or pulling, are 12 in. long and 4 in. high. It was discovered that seals do not have to be cooled to room temperature—but only enough to allow peeling from the belt without distortion.

Since the bottom seal on the test package used involved only two layers of film, it presented no problem and was easily made with a 12-in. sealing plate and a 12-in. cooling plate, both located under the bottom glass-cloth belt.

Plastic-coated glass cloth was selected for the belting because of its release properties, easy fabrication, ability to withstand high temperature and trouble-free operation. A special smooth finish eliminated any weave pattern in the sealing area.

One type of glass cloth showed no wear after 300 hrs. of operation in continuous contact with the heating and cooling plates.

Stainless-steel and Mylar belts were found to be expensive, difficult to fabricate, or lacking in the necessary release properties. Leather and rubber belts were rejected because of the high operating temperatures. Wire-mesh belts were ruled out because of the weave pattern and sticking.

Sealing range

For good seals, polyethylene has always been assumed to have a very narrow temperature range.

Therefore, Bakelite researchers sought first to pin down its temperature limits. In a variety of experiments, pressure on the test packages was held constant. Time was gauged by varying the speed of the belts between 27 and 57 ft. per minute. Sealing-plate length and/or temperature were changed to determine the effect of heat on the integrity and appearance of the seals.

The results proved, surprisingly, that polyethylene film has a sealing range of at least 60 deg. F. at each belt speed. And in certain instances this temperature spread can widen to 160 deg. This "good sealing range" is shown by the shaded area on the accompanying chart (p. 116). This is a typical example using a 12-in. sealing plate with treated film.

Within certain wide limits, as for example 300 to 440 deg. F. at a belt speed of 40 ft. per min., good seals were consistently obtained on 1.5-mil, high-clarity polyethylene film.

Supplementary tests revealed this important fact about peelable polyethylene seals: although seals obtained at the lower range of temperatures are definitely more peelable than the welded seals made in the higher range, they are tighter and harder to open than conventional heat seals made in waxed paper or cellophane. And it is still not possible to get easily peelable, yet dependable, polyethylene seals that can be ripped open without deforming the film.

Such package-opening devices as tear tapes, bead seals and perforated film have been successfully tested on laboratory equipment.[1] But, to date, no commercial applications have been seen on straight polyethylene film (although a successful tear tape for 1-mil coated polyethylene in a lamination is reported just this month[2]).

With temperatures and sealing ranges established for a single polyethylene film, the Bakelite researchers turned to analyzing the effect of several film variables on range and temperature. They discovered that six factors markedly influence the sealing operation. Each was measured. Here's how they add up:

▶ *Film thickness.* For untreated films, the sealing range widens as the thickness of the polyethylene film increases.

▶ *Treatment.* Films treated for printing have a wider range than untreated films.

▶ *Film density.* Between 0.914 and 0.948, density does not seem to affect size of the sealing range, except at the highest belt speed (57 ft. per minute). The range for 0.960 film narrows with increased speed, but is adequate at all speeds.

▶ *Belt thickness.* A wider sealing range is obtained with 10-mil coated-glass belts than with 5-mil coated-glass belts.

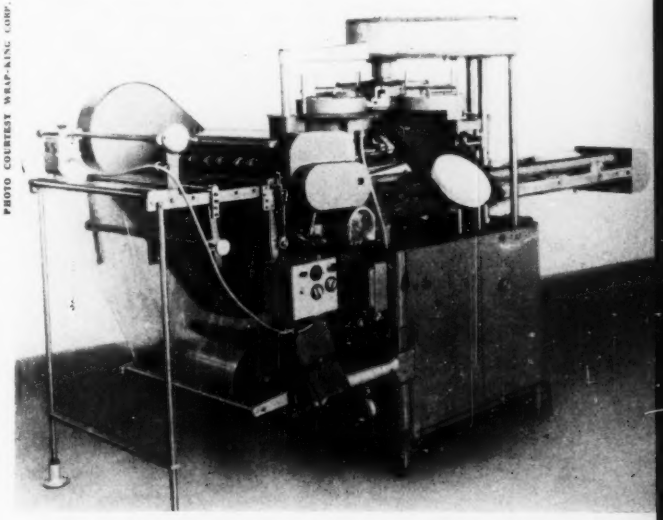
▶ *Belt speed.* Increasing belt speed increases sealing range.

▶ *Package resiliency.* A yielding package (such as napkins) requires more pressure than a relatively unyielding package (boxes) to produce a strong, neat-looking seal. Sealing range, however, is decreased in the case of the yielding package because of faster heat transfer. Of notable interest in the box test is the fact that if the pressure was adjusted correctly, no burn-through occurred on the hard corners.

Varying effects of these factors are shown graphically and completely in [*Continued on page 188*]

Round products can be overwrapped in polyethylene with a drape and underfold seal on this machine, which employs a standard elevator and rotary folding-and-sealing-head principle. The machine, used by Continental Can Co. in the production of paper plates, is provided with special handling mechanisms for film control.

PHOTO COURTESY WRAP-A-LINE CORP.



[1] See "What About Polyethylene?" (Part II), MODERN PACKAGING, Jan., 1958, p. 130.
[2] See "A Tape That Tears Polyethylene," this issue, p. 91.

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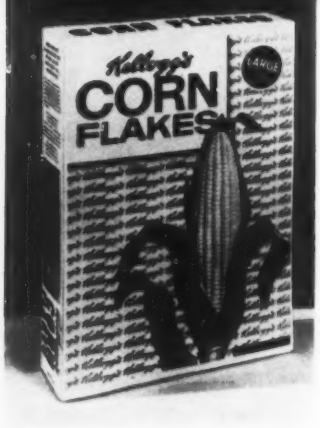

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Packaging Pageant

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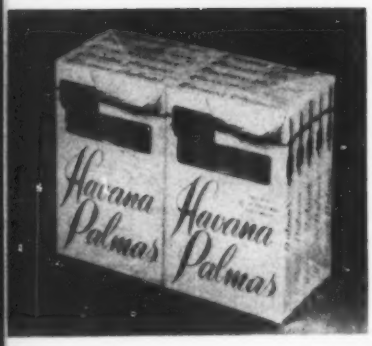

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1 To assure quick cabinet identification of its new 6- and 12-oz. cans of frozen orange-juice concentrate, Seabrook Farms Co. lithographs colorful product vignettes and company logotype horizontally as large as space permits on both sides of each can against a contrasting dark blue background. Can, American Can Co., New York.

2 With what it tags "bank-note packages," Kellogg Co. is again pacemaker of a new design technique to achieve stand-out shelf packages in the cereal field. The device is a repetitive background motif of the company's signature in red that immediately distinguishes every Kellogg package.

3 In the redesign of its multiwall bags for fertilizer, Meridian Fertilizer Factory, Hattiesburg, Miss., adopts a graphic technique that reportedly improves package appearance at a savings in production cost. The former bag was white kraft, printed in three colors. The new bag, printed in one color on natural-color kraft, achieves the appearance of two-color design. Bag and Uni-Color printing process, Union Bag-Camp Paper Corp., New York.

4 Polymer-coated cellophane as the shipping wrap for 10-carton bundles of Havana Palmas five-packs has cut distribution costs 50 cents per 1,000 cigars, increased shelf life and does away with shipping-case disposal, says Regina Cigar Co., Philadelphia, Pa. The transparent, moistureproof wrap also has a display advantage. Cellophane, American Viscose Corp., Film Div., Philadelphia. Cartons, Rossotti Lithograph Corp., North Bergen, N.J.

5 Breaking with tradition in its industry, Castello Packing Co., Brooklyn, is marketing its Cavalier olive oil in a round, lithographed metal container with a dripless polyethylene nozzle. A thermoplastic cement on the can's side seam prevents leakage and permits all-around printing. The can is lithographed in white, red, green, yellow and gold. Its red-and-white dome top contains product information and a spot for price. Dripless can, Continental Can Co., New York. Acrylonitrile screw cap, Gibson Associates, Berkeley Heights, N.J. Cement, Dewey & Almy Chemical Co., Cambridge, Mass.

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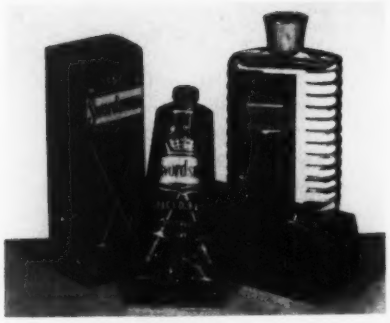

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6 This dome-top, screw-cap metal can was selected by "X" Laboratories, Inc., New York, as the most suitable type of container for its "X" Satin Gas, a gasoline additive which is poured directly into automobile gas tanks. When inverted for pouring, the neck of the gold, blue and white lithographed can fits inside the gas tank, preventing spillage of the product. Can, Crown Cork & Seal Co., Inc., Can Div., Philadelphia, Pa.

7 A flip-top box for tea, designed for neater closing and storing, has been introduced by Martin L. Hall Co., Boston, Mass., for its Victor Tea Bags. The flip-top closure on the red, yellow and black carton is secured by perforations which can be broken by thumbnail pressure along the perforation line. Carton, Fort Orange Paper Co., Castleton-On-Hudson, N.Y.

8 A polyethylene pour-out spout that extends above the lip of the bottle to prevent spilling adds extra convenience to Sno-Bol Co.'s liquid household cleaner. A molded phenolic cap with a raised top section provides clearance above the spout. Glass bottle with pour-out spout and closure supplied by Armstrong Cork Co., Lancaster, Pa. Tamperproof Cel-O-Seal closure band, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Two-color, applied-color labels, Anchor Hocking Glass Corp., Lancaster, Ohio; Knox Glass, Inc., Knox, Pa., and Obear-Nester Glass Co., East St. Louis, Ill.

9 A luxury gift look is suggested by this family of Swordsman brand men's toiletries by Pelindo, Inc., New York. Product data and package design are printed in gold color against a black background. Design, Gilbert Snyder, New York. Glass bottle, W. Braun Co., Chicago. ACL decoration, Glass Crafters, Inc., Baltimore, Md. Molded phenolic screw cap, Richford Corp., New York. Collapsible metal tubes and folding cartons, Sheffield Tube Corp., New London, Conn.

10 To facilitate opening tightly foil-wrapped Cashmere Bouquet bar soap, Colgate Palmolive Co., New York, has added the convenience of easy-opening tear tape, "Zip-Tape." The Dobeckmun Co., Cleveland, Ohio.

Drawstring

Sometimes it doesn't take much to turn an ordinary package into a cost-cutting and sales-building asset.

Simply by adopting a drawstring closure for its polyethylene film bags of oranges, Donna Fruit Co. has increased packing speeds 15%, slashed labor costs and re-activated an important but long idle package conveyor. What's more, this Edinburg, Tex., citrus packer's new 5-lb. bag with drawstring "handle" is easier to display in retail stores and is more convenient for shoppers to carry home. That's tall performance from a little piece of twine.

Another factor of significance to packagers of film-bagged products is that the drawstring permits easy, secure reclosure of the bag after part of its contents has been removed.

When Donna Fruit's plant was built, before World War II, it was equipped with a mechanized overhead conveyor system for transporting filled, drawstring-closed, 5-lb. mesh bags of oranges to the shipping station. But when polyethylene film came on the scene, management decided to switch to this popular packaging material. The transition meant, however, that Donna Fruit's overhead conveyor system could no longer be used, since the company's tied-top 5-lb. bags had no attachment that could be looped over the conveyor-belt hooks.

That's where the new drawstring closure comes into the picture. Donna Fruit's new orange bags, fabricated of 2-mil polyethylene, have a heat-sealed "hem" at the top, through which is strung a length of cotton cord, knotted to form a loop. The cord emerges from the center of the back seam, where the film is of double thickness. After packing, the drawstring is pulled tight, though a small opening remains at the mouth of the bag for ventilation purposes. No additional closing device is required. The filled bags then are hung by their drawstrings on the re-activated overhead conveyor system. Strength of the film and closure is adequate for this handling.

Besides the savings in time and labor in handling, the company has derived extra benefits from its new package. First, the drawstring gives rigidity to

Drawstring closure runs through a strong, heat-sealed hem. Loop of cord makes the bag hangable and also serves as a convenient carry handle. Heavy-gauge polyethylene bag, holding 5 lbs. of oranges, is printed with mesh pattern.

poly bag

Because it's hangable, Donna Fruit's new 2-mil bag for oranges offers conveyor-line efficiency in filling, effective display in stores and increased appeal to shoppers

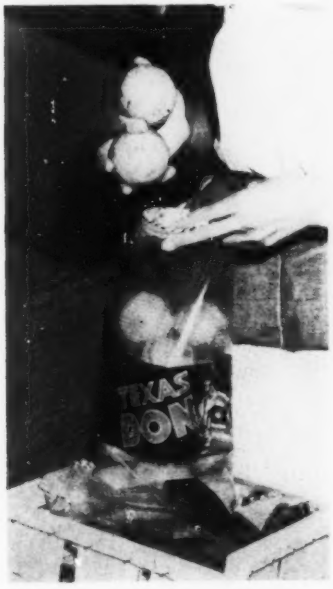
the mouth of the gusseted bag, which means that empty bags remain open and can be filled more quickly and more neatly. Second, there is a saving in the cost of the polyethylene film; the bags with drawstring closures require less film to fabricate than do tied-top bags. Third, and certainly not least, the loop of the drawstring facilitates hang-up display in retail stores and also serves as a convenient carry handle for the shopper. The empty bag can function as a container for shoes, children's toys, clothespins or other small household objects.

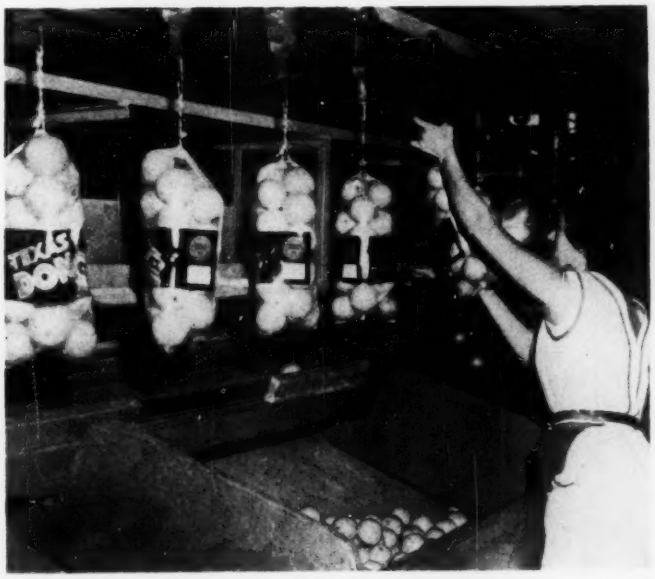
The bags are received by Donna Fruit complete with drawstrings and flexographic printed with high-gloss inks. A printed mesh pattern is calculated, along with package design, to enhance brand recall among consumers.

The company packages about 30,000,000 lbs. of oranges a year, 40% of which is in film bags, the remainder in corrugated cartons. Based on successful reaction to its drawstring polyethylene bags, Donna Fruit expects this percentage to increase.

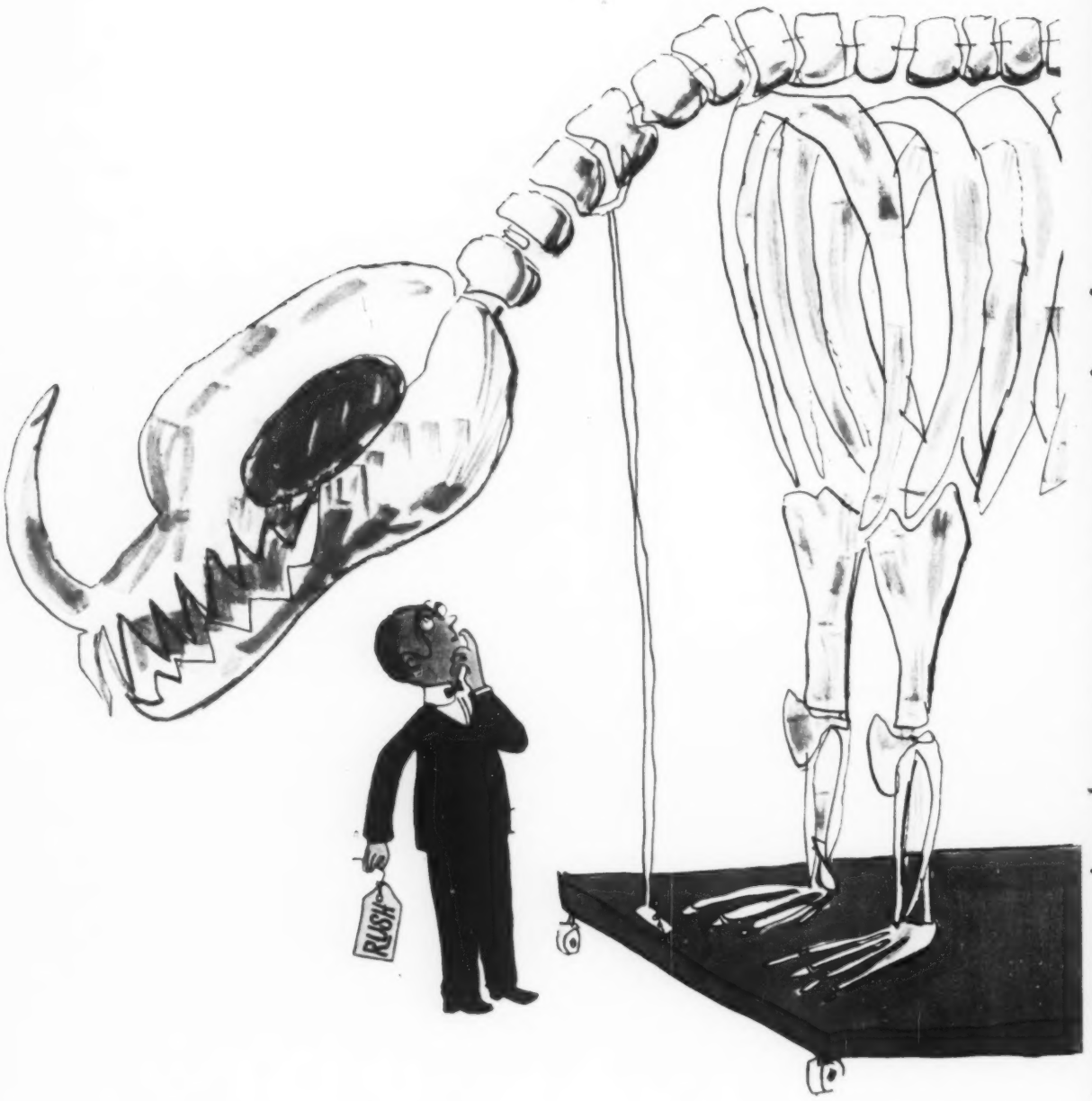
Supplies and services: *"Zip-Cord" polyethylene bags fabricated and printed by Continental Can Co., Inc., Shellmar-Betner Div., Mt. Vernon, Ohio.*

Faster packing is facilitated by drawstring, which imparts greater rigidity to the mouth of the empty bag.





And away they go, on overhead conveyor system which had been in disuse since company abandoned drawstring mesh bags several years ago. Packing speeds have been increased 15% and labor costs have been reduced considerably.



IF NATIONAL CAN'T PACKAGE IT

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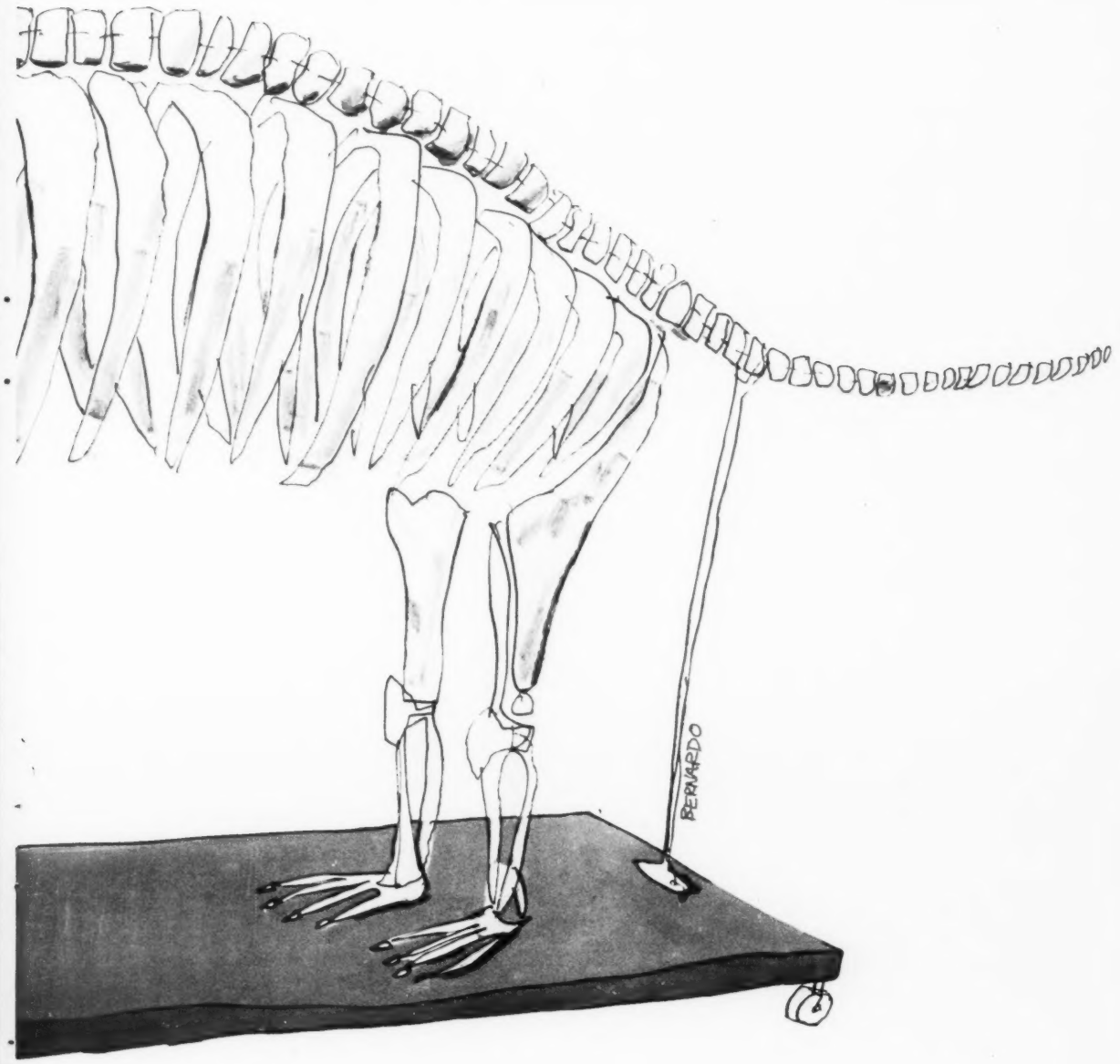

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Convertible display

A floor display that converts into a counter- or cart-merchandising unit simply by removing the compartmented tray from its corrugated base is being used by Club Aluminum Products, Chicago, to display its line of stainless-steel tableware in supermarkets, where there appears to be a growing market for individually polyethylene-packaged tableware items as impulse purchases.

Distributed by Supermarket Service, Inc., Club Aluminum's rack-jobber division, the floor-or-counter merchandiser is backed by a die-cut riser that quickly points up the advantages of stainless-steel tableware and encourages shoppers to make up their own sets from the products on display. The corrugated tray is divided into five compartments, containing dinner knives, dinner forks, tea spoons, salad forks and serving spoons. Each compartment is labeled to guide restocking with the proper tableware item.

The display unit is printed in blue and white for a subtle tie-in with the new "Lilac" pattern of the company's line of tableware.

Supplies and services: *Display by Stone Container Corp., 4200 W. 42 Place, Chicago 32.*

Display Gallery

Seconds to set up

This self-service floor merchandiser for R. T. French Co.'s Instant Mashed Potato packages reportedly can be set up in a matter of seconds, without using staples or other fastening devices.

The corrugated bin is 33 in. long, 16 in. wide and 26½ in. deep. In setting up the display, the die-cut lithographed riser (showing a man serving the final product) is slipped over a paper tube which is fastened to the bin with paper rings. Calculated to attract shoppers' eyes from long distances in the store, the floor stand features the name "French's" prominently in three places. Together with stylized arrows pointing to the jumble display of potato mix, the copy is printed in white to stand out against a brown background.

The company is using this new merchandising unit to promote its product in all 48 states and reports that it will also be used for other French products.

Supplies and services: *Display by Fort Wayne Corrugated Paper Co., 130 E. Douglas Ave., Fort Wayne 1, Ind. Lithography by Great Lakes Press Corp., 445 Central Ave., Rochester, N.Y.*

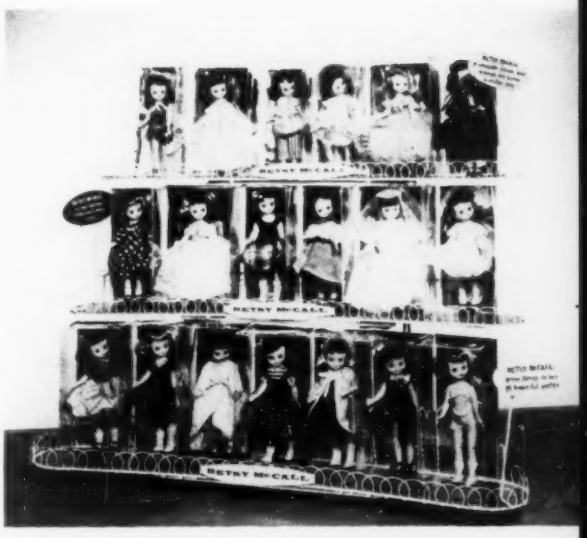
'Fashion-show' display of doll costumes

An effective method of protective display for the variety of costumes that can be purchased for one basic "dress-up" doll is illustrated by this full-visibility counter unit adopted by American Character Doll Co., New York, for its Betsy McCall doll. The display consists of three paperboard platforms with decorative wire guard rails which may be set up in tiers or side by side on the counter. Each platform holds six dolls to show the 18 costumes available for the basic doll, which also is displayed.

Combining maximum visibility with protection against dust and handling, the dolls are packaged in individual boxes with formed acetate covers on which are printed price and product data. The foil-laminated paperboard base of each package has a loop of elastic which is slipped around the doll to keep it upright. Printed die-cut ovals on each platform spotlight the selling points.

Other display material available for the company's line of dolls includes a miniature "fur salon" and "storybook" folding cartons with transparent windows.

Supplies and services: *Design by Alan Berni & Associates, Inc., 530 Fifth Ave., New York.*



Display Gallery

Graphic message makes a fast demonstration

To succeed in this era of split-second selling, a product display must attract attention immediately and must get its message across as graphically as possible. One way to accomplish this is suggested by a package-and-display redesign for Vapor Mist inhalant for children, made by Practical Electric Products Co., Yonkers, N.Y.

The company's new and larger display, containing four rows of three bottles each, separated by a divider, points up the end use of the product via a four-color illustration of a sick child inhaling the chemical as it is dispensed from the vaporizer. The illustration also suggests the use of the company's own major product (an electric vaporizer)—a subtle selling point that was ignored in the old display.

The pictorial product demonstration also has been carried over to the new paper labels on the company's bottles.

Supplies and services: *Design by Associated Industrial Designers, 284 Fifth Ave., New York 1. Display box by Federal Carton Corp., 2001 Tonnelle Ave., North Bergen, N.J. Glass bottles by Brockway Glass Co., Inc., Wood St., Brockway, Pa. Labels by La Salle Litho Corp., 52 E. 19 St., New York 19.*

Spreading economy

Efficiency in the packaging line can cut other costs, too:
I. J. Grass Noodle Co. proves it
by doubling production speed and reducing expenses 30%

Can a more efficient packaging line cut more than just packaging costs? Executives of the I. J. Grass Noodle Co. say the answer is "yes!"

With $80,000 worth of packaging-line changes in the past year, this Chicago manufacturer of noodles and soup mixes credits its latest improvements with sparking production-cost savings of 30%.

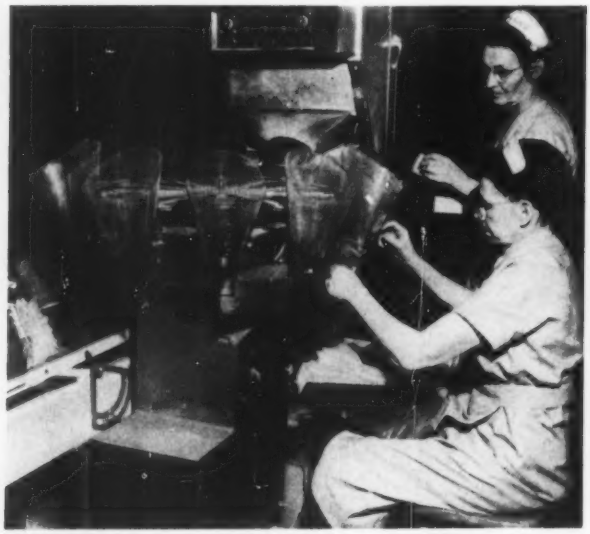
Here are its newest packaging improvements: an automatic noodle-packaging operation that doubles line speed, cuts materials and labor costs, provides better product weight control, makes couponing easier and reduces space requirements.

And here are the resulting plant improvements: faster production requiring bigger product batches, straight-flow production, greater plant efficiency, stepped-up product quality.

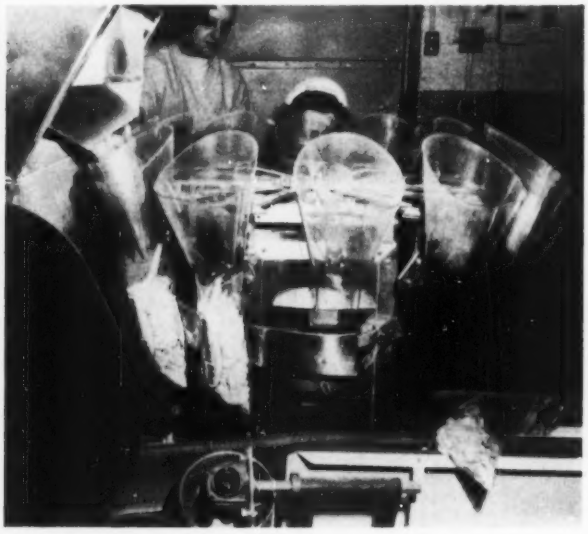
Spelled out in detail, line speed has doubled from about 15 bags per minute on the old line to 30 on the new, depending on package size. And a short-length case sealer has helped eliminate stitching. With other new equipment, this means labor savings almost equaling the time of two operators.

The noodle line handles four bag sizes: 5, 8, 12 and 16 oz. Four basic sizes of noodles range from $^1/_{16}$ in. to $^1/_2$ in. wide, although special sizes are easily packed.

From the second-floor manufacturing area, the noodles now follow this route: down a hopper to the new first-floor packaging line, over a series of vibratory plates, through a vibratory trough, up an inclined cleated conveyor belt to the top of the filling machine, through two more vibratory troughs (the

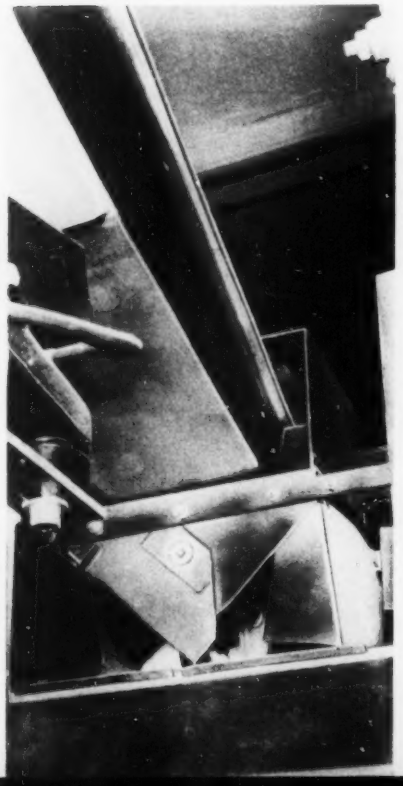


Filling horns of molded acrylic are one key to doubled production speed. Twelve-arm holder moves bags under filling chute. Each horn has back gripper to hold bags during filling. After seated operator places bags on horns, standing operator drops coupons in bottoms of bags prior to filling so coupon can't interfere with heat sealing.



Bag discharge from filling horns automatically drops filled polyethylene bags onto double L-shaped conveyors that move product to a heat sealer. A plate positioned at the release point automatically triggers a release mechanism on the grippers at the back of the filling horn.

Re-usable polyethylene bags in four sizes are used to package this food item in new automatic operation at I. J. Grass Noodle Co., Chicago. This procedure has resulted in increased product quality and greater output.



Product flow to one of two weighing hoppers is beginning of new automatic packaging operation. From inclined vibratory trough (upper), noodles move downward to pivoted gate (lower), which shunts them to one hopper while a second full one is being emptied into a bag. In this picture, gate is directing noodles into hopper at right.

second one speeded up to thin out product flow) and into either hopper at a twin weigh station.

As soon as one hopper is loaded, a bottom door automatically opens to release the noodles to a chute for bag filling. Simultaneously, a gate at the top of the hoppers is flipped to cut off product flow to the "full" hopper and so shunt noodles into the second hopper. Automatic weighing is effected by floating the hoppers on an oil-bath weigh system. Adjustments can be made if quality checks show that bag weight is out of line with standards.

Under the filling chute is a horizontal 12-arm rotary bag holder. On the protruding end of each arm is mounted a molded acrylic filling horn. A spring-loaded gripper on the back of each horn holds the bags during the filling operation.

An operator places a printed polyethylene bag on

the bottom of each funnel-shaped filling horn in turn. The rotary bag holder is indexed to move a bag under the filling chute each time one of the twin hoppers releases noodles. After the plastic horn guides the noodles into the bag, the radial arm vibrates a few seconds to shake the product down into the bag.

Filled bags rotate to a release station where a plate triggers the bag gripper so that each bag drops onto double belt conveyors.

Here an operator runs the bags through a heat sealer. Another conveyor drops them onto a rotating collector table at the case-packing station.

An operator then packs the bags into a corrugated shipper which is sent through a short, chain-driven automatic case sealer. Cases are automatically code dated as they move under pressure through the caser. A conveyor lifts cases to the top of the room where they move by gravity to a centralized palletizing station in another room.

There, cases merge from the noodle line, a soup-mix line and an improved soup-mix line. Palletization for all of the lines thus is coordinated before shipping cases are moved to the shipping department.

One advantage of the new line is easier couponing. An additional operator at the bag-loading station merely drops a coupon down each plastic filling horn after bags have been fitted to the bottom. This way, the coupon cannot possibly be positioned near the top of the bag, where it might cause difficulty at the heat sealer.

Supplies and services: *Filling machine and collector table by The Woodman Co., Inc., 647 E. College Ave., Decatur, Ga. Heat sealer by Ralph Chaffee & Co., 2358-2360 Market St., San Francisco 14. Conveyors by Doughboy Industries, Inc., New Richmond, Wis., and Rapids-Standard Co., Inc., Rapistan Bldg., Grand Rapids 2, Mich. Case sealer by A-B-C Packaging Machine Corp., Live Oak St., Tarpon Springs, Fla. Coder by Kiwi Coders Corp., 4027 N. Kedzie Ave., Chicago 18. Glue by Manhattan Paste & Glue Co., Inc., 425 Greenpoint Ave., Brooklyn 22. Bags by Milprint, Inc., 4200 N. Holton St., Milwaukee 1, Wis., and Cello-Craft Products Corp., 1401 Fourth Ave., New Hyde Park, N.Y. Boxes by Acorn Corrugated Box Co., 2263 S. Lumber St., Chicago 16, and Lanzit Corrugated Box Co., 2445 S. Rockwell St., Chicago 8.*

Heat-sealing station is located on right-angle conveyors beyond the bag filler (background). Weigh scale behind the line is for quality checks. Sealed bags are automatically conveyed to a case-packing station.

U-shaped packaging line ends here, where operator (foreground) performs case packing and sealing. Bags collected from rotating table (right) are packed into cases and sent through automatic short case sealer, which includes a code dater. Finished cases are conveyed upward (left) to central palletization station in another room. In left background is huge hopper on diagonal that feeds noodles to packaging line from manufacturing floor above. Normal line operation now calls for three operators instead of five.

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Ingeniously designed blank is specially constructed to be set up by regular carton machine. It becomes a boot (right) to hold a round shampoo bottle and a rectangular Creme Rinse bottle. The side flaps were cut back and the flap tongues strongly rounded to make machine operation possible.

Adapting to the machine

With slight modifications of carton design, Breck is able to run a limited promotional twin pack on regular carton set-up equipment, avoiding hand labor

Many promotional packs are short runs which do not warrant buying special equipment. But sometimes, with careful attention to package design, it is possible to switch over packaging machines already in the plant so as to mechanize the otherwise-costly special run.

Such was the case at John H. Breck, Inc., Springfield, Mass., where a set-up machine, used for the company's standard folding carton, also sets up promotional boots, thereby reducing hand labor and pacing production on this packaging line.

The boot was used to combine a round, 8-oz. bottle of Breck's shampoo with a rectangular, 2½-oz. bottle of Creme Rinse—two containers with different cross sections.

The trick was to redesign the boot so it would not require expensive changes in machine parts. Simple modifications were worked out with the package supplier. The results on the line enabled Breck to release four operators for other duties.

The first change was to cut back the side flaps (see photo) to allow greater clearance during folding. Next, the tuck flaps were rounded off for easier entry. The blank was scored, formed and glued in a shape for feeding in knockdown position.

The original blank had a straight top line. But it was found that a half-inch riser on the back was required by the machine's feeding and opening mechanism.

After being set up at a rate of 4,000 boots per hour, the containers are turned upright by an arm attachment on the machine and discharged to a conveyor where they are hand filled by 25 girls, who work directly from loading tables attached to the conveyor belt.

For extra shipping protection of the bottles, a rectangular piece of low-test corrugated board (B flute) is inserted by hand between the bottles.

Supplies and services: *Bivans Tuck-O-Mat set-up machine by New Jersey Machine Corp., 16 St. and Willow Ave., Hoboken, N.J. Promotional boot by The Warner Bros. Co., 325 Lafayette St., Bridgeport 1, Conn.*

Fast and simple is the action on this standard carton set-up machine, adapted to handle promotional boots. Vertical feed (center) has a positive escapement that passes only one blank at a time. A reciprocating arm in the table top moves blank to left, where it is opened, tucked, lifted into a standing position on the packaging conveyor.

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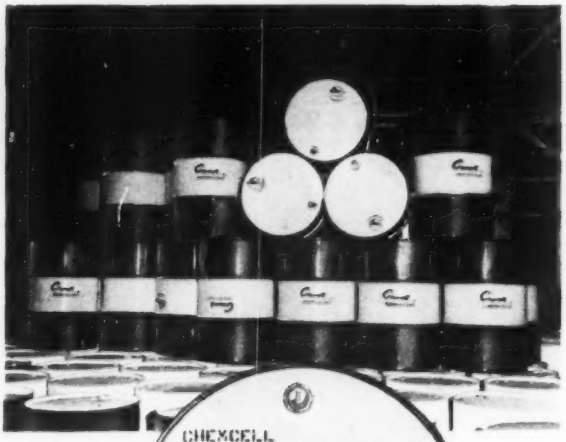

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Methods
Engineering
Testing

Polyethylene film for fruit

Box liners and covers are producing dramatic improvement in storage and shipping life of many fruits with selective control of moisture content and respiration

By R. E. Hardenburg[1], H. A. Schomer[2] and M. Uota[3]

New agricultural uses for polyethylene film continue to appear. In the fruit-and-vegetable-packaging industry some of these new applications of polyethylene went into commercial use faster than research workers or plant managers could iron out basic or production-line problems. Polyethylene bags already are in wide use for pre-packaging fresh fruit and vegetables for self-service stores. Some of the kinds of produce currently pre-packaged in polyethylene are potatoes, onions, carrots, radishes, lettuce, apples, oranges and grapefruit.

The scope of this article will exclude this expanding field of consumer packaging. Instead, it will summarize current uses and knowledge of polyethylene box liners and protective covers for wholesale units of fruit. It will include applications of this film during cold storage of fruit and in transportation to market.

Today, the major uses of polyethylene in this field are for storing pears and apples and for shipping bananas and sweet cherries.

Polyethylene film

It has been estimated that of the 360 million lbs. of polyethylene film produced last year,* 49% was used for produce packaging (8, 16).† A few years ago all polyethylene was assumed to be similar. Now there are many types with varying properties, making it necessary to specify type in ordering. This is especially important for fruit packers, where slight differences in film permeability may spell the difference between success and failure. The optimum requirements of a film for fruit packaging are only partially established. Very likely they will differ for various fruits, because the fruits themselves have different respiration rates and storage requirements.

What are the properties of polyethylene that make it popular for produce packaging? They have been enumerated by Southwick (12) and by Thor and Goldman (13), as well as by others. Briefly, the important properties are as follows: Polyethylene film is transparent (although it may be somewhat cloudy), tasteless, odorless, non-toxic, chemically inert, flexible at low temperatures, easy to handle, tough, durable, resistant to tearing and readily heat sealable at controlled temperatures. Many of the newer types have improved transparency. The present transparency of polyethylene is adequate for most box-liner applications.

Of special interest to the fruit packer is the low level of water absorbency of polyethylene and its good resistance to transmission of water vapor. It stands up well under storage conditions of high humidity. Also, its moistureproof property minimizes weight losses from packaged fruit. Water-vapor transmission of polyethylene varies inversely with thickness, being approximately twice as high for 1-mil film as for 2-mil thickness (13).

The economics of polyethylene also are favorable for the fruit packer. The price of polyethylene has droppped gradually. In 1956 the cost of 1,000 sq. in. of 1.5-mil film was about 2.8 cents, or 55 cents a

[1]Senior Horticulturist, Beltsville, Md.; [2]Senior Physiologist, Wenatchee, Wash.; [3]Horticulturist, Fresno, Calif.; all with the Biological Sciences Branch, Agricultural Marketing Service, U.S. Department of Agriculture.

*Other authorities say 200 million pounds. See "What About Polyethylene?" MODERN PACKAGING, Dec., 1957, p. 98—ED.

†Numbers in parentheses identify References appended.

Figure 1. Here is a box of Anjou pears with sealed polyethylene liner, showing closure by twist seal. Storage life of the pears in this type of pack is lengthened by one to two months.

pound, making it one of the most economical packaging films (12). The normal commercial thickness for fruit-packaging applications is 1.5 mils. At this thickness, 1 lb. yields 20,000 sq. in. of film.

Importance of permeability. The permeability of polyethylene to oxygen (O_2) and carbon dioxide (CO_2) is an important characteristic if the liner is to be sealed. Fresh fruit is composed of living tissues carrying on respiration. In the respiration process O_2 is consumed and CO_2 is given off. A film box liner must admit sufficient O_2 to permit enough respiration to keep plant cells alive. It must allow the escape of some of the released CO_2.

What happens to fruit packaged in a sealed film box liner? At first, respiration continues at a normal rate through use of the O_2 trapped in the box. CO_2 is produced at about the same rate that O_2 is used. As the O_2 is used up, the rate of respiration is reduced. When the O_2 concentration has dropped from the normal 21% to from 1% to 3%, the respiration rate is usually about half the normal rate. A carefully controlled modified atmosphere (gas storage), where the respiration rate is reduced, is beneficial for some fruits. Ripening and softening are retarded, yellowing and oxidative color changes are restricted and carbohydrate and vitamin C losses are reduced. Some of these advantages may be obtained with a film liner of adequate permeability for the storage conditions.

However, in a sealed box liner with inadequate permeability, all the free O_2 may be used up in a few days, even in cold storage. Then respiration becomes anaerobic. In anaerobic respiration (respiration in the absence of free O_2), alcohol and CO_2 are produced. This type of respiration is sometimes referred to as fermentation or suboxidation. CO_2 concentrations of 10% to 40% are sometimes found in non-ventilated film packages. As a result of the absence of O_2, and with the accumulation of CO_2, alcohol and other metabolic products of anaerobic respiration, the cells may be killed and the fruit may become unsalable. Even before this occurs, fruit may develop undesirable off-odors and off-flavors.

Conventional polyethylene film is relatively permeable to O_2 and CO_2 when compared with other packaging films. Polyethylene is several times as permeable to CO_2 as to O_2. Even with its relatively high permeability, polyethylene cannot be used as a sealed box liner for fruit held at warm temperatures. Under cold-storage conditions, conventional polyethylene (1.5-mil film) has adequate permeability for use as a sealed box liner for a few kinds of fruit. The fact that the respiration rate of fruit is much lower at cold temperatures than at warm temperatures is an important point. The permeability of polyethylene is markedly less in cold storage than at room temperature, as shown in Table I. Films of greater permeability to the respiratory gases than current types of polyethylene are still needed.

It is doubtful that the new high-density polyethylenes (density range 0.93-0.96) will be useful for

Table I: Oxygen and carbon-dioxide permeability of four conventional polyethylene films of different density measured at two temperatures[1]

Polyethylene density	*Permeability (cc./mil/24 hrs./100 sq. in.)*			
	Oxygen		*Carbon dioxide*	
	74 deg. F.	*32 deg. F.*	*74 deg. F.*	*32 deg. F.*
0.915	545	160	2,860	1,780
0.917	440	130	2,300	1,230
0.918	370	120	2,110	1,180
0.921	235	110	1,720	1,100

[1]Data courtesy Bakelite Co. Laboratory, Bound Brook, N. J.

Table II: Storage life of four varieties of pears at 30 deg. F. when packed the standard way and in sealed polyethylene liners

Variety	*Maximum storage life in standard packs (days)*	*Maximum storage life in sealed poly liners (days)*
Bartlett	70-85	107-126
Anjou	175-185	214-216
Comice	90-105	120-135
Bosc	90-100	120-130

Table III: Ripening and shelf life of Anjou pears at 65 deg. F. after storage at 30 deg. F.

Type of pack	*Period of storage at 30 deg. F. (days)*	*Period to acquire optimum dessert quality (days)*	*Shelf life at acceptable dessert quality (days)*
Box with	152	8	9
1.5-mil liner	199	7	5
Box without	152	8	4
film liner	199	10[1]	0[1]

[1]Failed to ripen normally, dessert quality poor.

fruit storage, because they are reported (7) to be only about 50% as permeable as conventional polyethylene (average density 0.92).

Some uses of polyethylene do not require that the film be sealed around the fruit. Where only a water-vapor barrier is needed, a film liner can be left unsealed and merely be folded over the top of the fruit after the box is filled. Where it is known that polyethylene is not sufficiently permeable for a particular use, a limited number of perforations sometimes can be added to supply a minimum amount of ventilation.

Storage of pears

The adoption of polyethylene liners by the pear industry was very rapid after it was shown experimentally by Gerhardt (3) that by their use the storage life of Bartlett, Anjou, Bosc and Comice pears was greatly extended and that shelf life, after the pears were ripened, was significantly lengthened (Figure 1). Only a few carloads of Bartlett and Anjou pears in poly liners were shipped in 1952, whereas in 1956 more than 3,500,000 boxes, representing about 70% of the entire pear crop of the Northwest, were packed in polyethylene-lined boxes. Nearly 80% of the Anjou crop was packed in polyethylene.

The length of time that pears may ordinarily be stored at 30 deg. F. before they lose their capacity to ripen varies with different varieties. This storage life is lengthened by one to two months when the fruit is packed in polyethylene liners possessing the desired air-exchange properties, as shown in Table II (10).

The film box liners (1.5-mil thickness) are merely large gusseted bags with approximate dimensions of 18 by 15 by 32 inches. After the pears are packed, air is withdrawn from the bag to facilitate lidding and the liners are sealed.

Physiological changes, generally associated with progressive ripening of pears in cold storage, are definitely retarded by the use of the sealed film liners. The fruit has a greener, fresher appearance, is freer from shrivel and can be stored longer at 30 deg. F. than comparable fruit in a standard pack without the protection of sealed polyethylene. Respiratory activity and soluble-pectin formation are retarded by the modified atmosphere inside the sealed liners and shelf life of the ripened fruit is increased by several days (Table III).

During the first three years of experimentation with 1.5-mil polyethylene liners for pears, the CO_2 in the sealed packs reached an equilibrium concentration of 1% to 3.5%, while O_2 was maintained at a concentration of 13% to 17%. However, beginning in 1954, CO_2 concentrations of 5% to 8% were commonly found and occasionally even higher levels occurred, while O_2 concentrations of 4% and even lower were observed in both experimental and commercial poly packs of pears. The only explanation available was that there had been a change in film characteristics due to changes in manufacture. Core browning of the fruit frequently accompanied the changed levels of CO_2 and O_2. The extent of the discolored tissue varied from an occasional brown flecking between seed carpels to an area encompassing the entire core area. Occasionally the discoloration extended even into the fleshy portion of the fruit (Figure 2). The texture of the affected tissue was pithy and dry.

Experimental work has shown that the brown core is related to the amount of CO_2 in the air surrounding the pears in poly packs and that concentrations of about 4% and above will produce severe brown

Figure 2. Bartlett pears taken from sealed-polyethylene-lined box with inadequate permeability, showing various degrees of pithy brown core and desiccated air pockets. This condition resulted when oxygen concentration dropped to 11% and carbon dioxide accumulated to 8%. Concentrations of above 4% CO_2 can produce severe brown core.

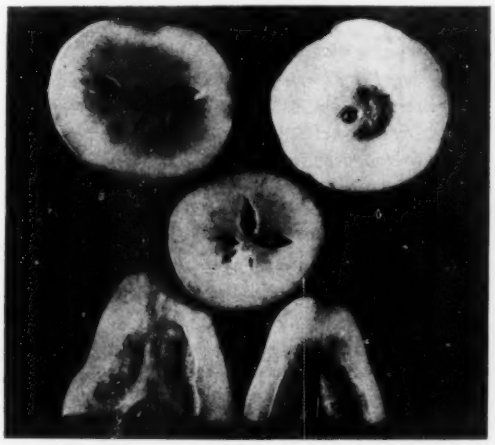

Table IV: Atmospheres in poly packs of Anjou pears at 31 deg. F. in sealed, non-perforated liners and liners with various types of perforations

Type of closure or perforation	*Atmospheres in package*	
	Carbon dioxide (%)	*Oxygen (%)*
Liner with twisted top, sealed	4.6	12.7
Liner with folded top	3.9	13.6
Liner with one ¼-in. hole	2.7	17.5
Liner with two ¼-in. holes	1.4	19.5
Liner with many pinholes (approx. 120)	1.4	19.0

Table V: Effect of 1.5-mil polyethylene box liners on weight loss and shriveling of Golden Delicious apples stored six months at 31 deg. F. (Values are averages of two seasons' data)

Storage period and type of box liner	*Weight loss (%)*	*Apples shriveled (%)*
Six months, 31 deg. F.		
Paperboard, no film	5.7	53
Polyethylene sealed	0.4	0
Polyethylene non-sealed	0.6	0
Six months, 31 deg. F. plus six days, 70 deg. opened[2]		
Paperboard, no film	8.0	71
Polyethylene sealed	2.6	3
Polyethylene non-sealed	3.1	2

[2]Following removal from cold storage these boxes were opened; film liners, if any, were removed and the fruit in the open boxes was then held six days at 70 deg. F.

core in fruit susceptible to the disorder. Weak fruit, in general, is susceptible.

Perforation of the film liners is now recommended to maintain a CO_2 level of 1% to 3% and thus avoid brown core. One or two small holes ($^3/_{16}$ to ¼ in.) or numerous pinholes may give the desired air exchange (Table IV).

Whether the film is sealed or has been provided with limited ventilation, the poly bags or liners should be torn or ripped open when the pears are removed from cold storage to a warmer temperature for ripening.

Storage of apples

Golden Delicious apples. Many thousands of polyethylene liners are now used for packing Golden Delicious apples for late storage. These apples are noted for their excellent dessert quality, but they have the disadvantage of shriveling badly during prolonged cold storage. In 1955 it was estimated that about 100,000 boxes of this variety were packed in polyethylene in the Pacific Northwest. Use of film liners to help maintain top quality of Eastern-grown Golden Delicious is increasing. Usually the liners are used in tray-pack or cell-type corrugated cartons (Figure 3), but some are used in wooden boxes and slatted crates.

Polyethylene was probably first tested for Golden Delicious apples during the 1944-45 season by Smith (11) at Wenatchee, Wash. Commercial use of polyethylene for apples developed during the early 1950s, concurrent with the research of Gerhardt (3).

Polyethylene liners in boxes or cartons do an excellent job of reducing moisture loss and thus preventing shriveling. Hardenburg (5) reported a beneficial effect of moistureproof polyethylene (1.5 mil) for Golden Delicious apples after only three months' storage at 31 deg. F. In April, after six months at 31 deg. F., fruit in polyethylene-lined boxes had lost less than 1% in weight and shriveling was negligible. In contrast, weight loss from standard-packed boxes averaged 5.7% and 53% of the apples were shriveled (Table V).

Some storage operators, through the use of polyethylene, now keep a part of their Golden Delicious crop in good condition as late as May. Measurements of the humidity within numerous film-lined apple boxes with an electric hygrometer have shown that the relative humidity is maintained at 99-100%.

Either sealed or non-sealed liners can be used for preventing weight loss if storage is at a recommended 31-32 deg. F. Most packers do not seal the liners for Golden Delicious, but merely fold the film over the fruit after packing. If a sealed liner is used during cold storage, it should be slit open before shipment to market so there will be no impairment of flavor at higher temperatures.

There is some beneficial effect of the modified atmosphere developed in sealed film liners for Golden Delicious apples. However, there is some danger in

Figure 3. Commercial cell pack of Golden Delicious apples with polyethylene liner shown prior to closing for shipment to market. Some of the apples are enclosed in decorative colored foil wraps to enhance their sales appeal.

Table VI: Oxygen and carbon-dioxide concentrations in boxes of Golden Delicious apples with various types of sealed polyethylene liners after storage for one, three and six months at 31 deg. F. (Values shown are averages of three boxes)

Type of polyethylene film	*Film density*	*Average film thickness (mils)*	*Oxygen (%)*			*Carbon dioxide (%)*		
			1 mo.	*3 mo.*	*6 mo.*	*1 mo.*	*3 mo.*	*6 mo.*
Mathon 10	0.923	1.5	11.7	12.1	11.8	4.5	4.5	4.5
DFDB-0111	0.921	1.6	4.7	5.5	9.8	5.4	5.6	4.8
Petrothene-213	0.919	1.5	7.8	9.0	10.2	5.5	5.3	4.9
DFDB-0114	0.918	1.5	7.0	7.7	8.6	4.8	4.7	4.8
DFD-4200	0.917	1.6	7.0	7.6	10.2	5.4	5.2	4.7
DFDA-0120	0.915	2.2	6.3	7.3	10.4	5.5	5.6	4.8
Mathon 14	0.914	1.6	7.5	10.8	10.4	4.6	4.2	4.3

using sealed liners—at least until closer tolerances on film gauge can be assured. Polyethylene film of the specified gauge made from different resins or by different manufacturers also may vary in permeability to the respiratory gases. In four years of testing 1.5-mil polyethylene as sealed box liners for Golden Delicious apples, the O_2 concentrations—measured at intervals during storage at 31 deg. F.—has ranged from 13% down to 1% or 2%. The CO_2 concentrations found were usually in a much narrower range, 4% to 6%. Data on atmospheres developed for several types of polyethylene during one season's tests are shown in Table VI.

Only sound Golden Delicious fruit free from injuries and possible orchard infections should be stored in polyethylene. The possibility of development of decay is increased by the high relative humidity inside a liner and there have been a few reports of increased decay through use of polyethylene liners. In the Northwest, fruit is washed with an effective fungicide before packing.

Good protection against shriveling can be given Golden Delicious apples with liners made of polyethylene laminated to kraft paper, or with polyethylene laminated to the inside of fibreboard cartons. Cost, ease of handling and plant adaptability will determine whether various packing houses will continue to use polyethylene bags or will switch to a polyethylene-laminated material.

Jonathan apples. Some commercial tonnage of Jonathan apples in the Pacific Northwest is now packed in sealed poly liners, mainly to control soft scald. The Jonathan apple is a variety very susceptible to soft scald, a physiological storage disorder distinct from storage scald. It is characterized by peculiar-shaped patches and ribbon-like areas of brown tissue on the surface of the apple and by a sharp line of demarcation between diseased and healthy tissues. Sometimes only the skin of the apple is affected, but more often the browning extends into the flesh for 1/8 in. or more. The incidence of soft scald is greatly increased by holding the fruit at warm temperature before placing in cold storage. Experiments have shown that the disorder can be controlled by packing Jonathans in sealed polyethylene liners (Table VII). The condition and dessert quality of the fruit in poly packs were superior to those of comparable fruit packed without film.

Experimental results with other apples. Numerous other varieties of apples have been packed experimentally in sealed and in perforated polyethylene box liners, namely: Yellow Newtown, Rome Beauty, Arkansas, Grimes Golden, Red Delicious, McIntosh, Cortland, York Imperial, Turley, Stayman Winesap and Gravenstein. Currently, none of these is packed commercially in film-lined boxes, except on a small test-lot scale. However, in many of the tests quality maintenance has been much improved when the liners were sealed. Most varieties of apples have a much better protective coating on the skin than do Golden Delicious applies, so shriveling is less of a problem. Polyethylene can very effectively control moisture losses and shriveling of any apple variety where it appears justified. During a typical cold-storage period, moisture loss usually can be held to 1% or less with polyethylene.

An important point to emphasize is that polyethylene liners must be tightly sealed and free of tears and holes if storage scald is to be controlled effectively. In many experiments completed thus far, scald has been more severe on fruit in perforated or unsealed liners than in boxes without film liners. Scald of Rome Beauty apples was reduced greatly when fruit was sealed in any one of several types of polyethylene (Figure 4). Similar data on scald control could be shown for numerous other varieties. Film liners are much less effective in controlling storage scald if there is a delay of a week or more after harvest before the fruit is packed.

Sweet cherries

Nearly all the sweet-cherry crop of the Pacific Northwest is now packed and shipped in sealed 1.5-mil polyethylene box liners (Figure 5). Cherries

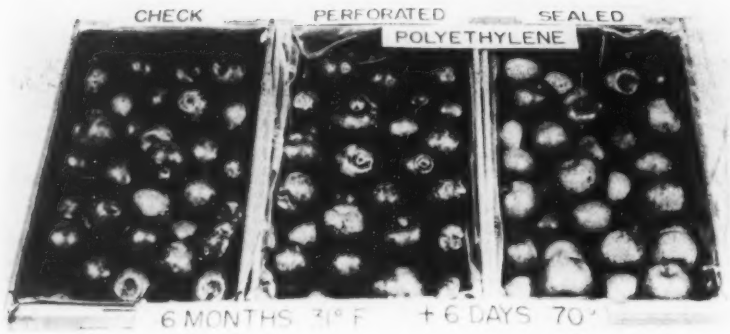

Figure 4. Rome Beauty apples with severe storage scald in paperboard-lined box at left and in perforated-polyethylene-lined box in center. Contrast these two with the good scald control in box at right, which had a sealed polyethylene liner during storage.

are tolerant of the atmosphere which is formed in the sealed bags at 31 deg. F. to 36 deg. F. In sealed poly bags of cherries during a 10-to-14-day period at 31 deg. F., average concentrations of 6.5% CO_2 and 9% O_2 were maintained. This level of CO_2 depresses metabolism of the cherries and thus slows down ripening. The film also almost eliminates moisture loss. Consequently, cherries in polyethylene retain a fresh appearance and bright color longer than those not in polyethylene (4).

Because they are perishable, sweet cherries are usually rushed East to market by express. However, the use of film liners permits shipment by freight, with considerable saving in cost to the shipper. There is no need for dry ice, which is ordinarily used to supply CO_2 for decay control in the carload during shipment. The fruit reaches market in a condition comparable to that of fruit shipped by express.

Cherries in polyethylene may even be held in cold storage at 31 deg. F. for as long as two weeks following harvest and still be shipped by freight to Eastern markets in acceptable condition.

Film closure can be made satisfactorily gastight either by twist seal or by a careful overlap fold of the film. Special spot-seal liners, made by spot sealing the film at the bottom, make it possible to inspect easily double-row-faced packs, with simple overlap resealing. In experimental lots, initial packing temperatures of the fruit (50 deg. and 80 deg. F.) did not materially influence the CO_2 and O_2 levels in the film-packed fruit, providing subsequent cooling was rapid and thorough.

With cherries, as with apples, poly liners must be slit or opened when the boxes are removed from refrigeration and the fruit held at higher temperatures.

Bananas

Use of polyethylene bags or sleeves to protect bananas during transit, which started in 1951, has increased until today nearly 100% of all imports are film packaged (9). This is a valuable new method of handling bananas. The use of polyethylene is aimed at reducing the number of unsightly scars and abrasion marks incurred during the long trip from plantation to market (1, 2). A single thickness of polyethylene between the bananas and the side of a boat, rail car or truck greatly reduces abrasive scarring. Bananas are easily damaged by rough handling and even a light scratch may turn into a black scar. If scarring is excessive, bananas must be discarded because consumers are reluctant to buy them.

The polyethylene used is mostly 27-in.-wide tubing cut to 54-in. lengths. The 1.5-mil film is perforated with many ¾-in. holes on 4-in. centers. These perforations give a theoretical free opening of between 2.5% and 3% of the surface area. The perforations allow good circulation, prevent too high a relative humidity and minimize condensation.

Usually the polyethylene sleeve is placed over the stems or bunches after they have been washed at packing sheds in the tropics. Knots then are tied in each end of the polyethylene film sleeve to hold it in place.

Storage of grapes

The use of polyethylene-film box liners for storing table grapes still is largely experimental. Grapes are fumigated in storage with 0.25% concentrations of sulfur dioxide at 10-to-14-day intervals. This procedure makes the use of a liner difficult because it prevents the gas from reaching the fruit. Without sulfur-dioxide fumigation, decay is excessive and the stems of the grapes tend to darken and become unattractive (14).

Experimental work by Uota (15) during the past several seasons indicates that polyethylene liners ventilated with 8 or 12 ¼-in. holes provide an effective water-vapor barrier, thus reducing weight loss and permitting sufficient sulfur dioxide to diffuse into the pack- [*Continued on page 143*]

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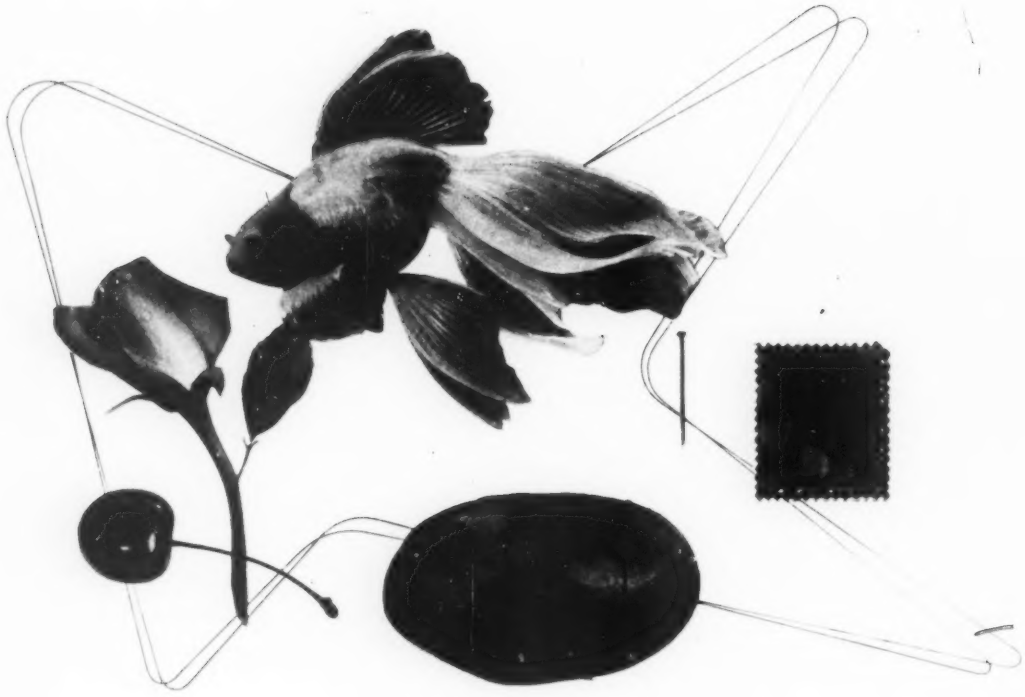

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[*Continued from page 140*] age during storage fumigation to control decay. A high percentage of decay occurred to the fruit in sealed film liners without perforations.

It was found that less decay occurred using perforated, polyethylene-coated kraft paper than with perforated polyethylene alone. This was attributed to the greater stiffness of the coated paper, which had the effect of preventing the perforations from collapsing and becoming ineffective during the fumigation period.

At present there is no commercial application of this type of perforated liner. However, experimental work is continuing in an effort to determine the most satisfactory fumigation procedure to use with film liners.

Results with other fruits

Polyethylene-film box or crate liners have not proved helpful in maintaining quality or extending storage life of grapefruit, strawberries, Italian prunes, peaches or nectarines. In all instances the liners markedly reduced moisture losses from those occurring in boxes without liners, but quality was damaged in some other way.

Harding, Lutz, Radspinner and Sunday (6) packed Florida Marsh grapefruit in 2-mil polyethylene for storage at 32 deg. F. There was no reduction in amount of decay in grapefruit after either four or nine weeks' storage when a non-sealed liner was used. With sealed liners the fruit developed a serious off-flavor.

In tests at Beltsville, Md., with Eastern-grown strawberries, peaches and nectarines, sealed film liners reduced decay, slowed ripening and maintained a fresh appearance during storage. However, the abnormal atmosphere within the liners, which helped produce these desirable effects, spoiled the flavor. The fruit was strongly fermented and winey. The strawberries were stored seven days at 40 deg. F. in 2-mil film; CO_2 accumulated to 25% to 35%, and O_2 dropped below 1%. Non-sealed liners with each of these fruits increased the amount of decay. The nectarines in film-lined boxes cracked when held at 70 deg. to simulate a marketing period. It is still possible that sealed film liners can help lengthen the storage life of these fruits if thinner-gauge liners (or more permeable liners) and a storage temperature of 32 deg. F. are used.

The storage life of Italian prunes, packed at Wenatchee, Wash., was not improved in sealed poly liners. Tissue injury (browning at the pit) was severe in all sealed poly packs at 40 deg. F. and became progressively worse with the length of storage. Perforated film liners may be used with safety at either 40 deg. F. or 31 deg. F., but their value is limited to prevention of moisture loss. Decay is encouraged in the humid atmospheres of perforated poly liners.

Table VII: Effect of sealed polyethylene box liners on soft scald of Jonathan apples stored at 31 deg. F.[1]

Post-harvest treatment and method of packaging	*Package atmosphere*		*Soft scald on removal from storage (%)*
	Carbon dioxide (%)	*Oxygen (%)*	
Immediate storage, standard pack	—	—	25
Three-day delay at 65 deg.:			
Standard pack	—	—	84
1.5-mil liner	3.5	8.0	0
3.0-mil liner	7.0	3.5	0
Seven-day delay at 65 deg.:			
Standard pack	—	—	94
1.5-mil liner	5.0	8.0	40
3.0-mil liner	7.0	3.5	0

[1]Observations on soft scald and the gas analyses were made at the time of withdrawal from 31 deg. F. storage, Jan. 4. There was no increase in soft scald in any of the lots when held an additional seven days at 65 deg. F.

Effect of liner on cooling rate

A polyethylene liner does have some restrictive effect on the cooling of fruit. The magnitude of this depends on how accessible to air flow the package is. A package having poor cooling characteristics and stacked in a manner that allows little surface presentation to the air stream will not cool much more slowly when *lined* than when *unlined*. On the other hand, use of a liner will materially alter the cooling characteristics in a package that is normally open so that convection currents can pass through the package of fruit.

For instance, in one storage where pears were individually paper wrapped and packed in standard wooden boxes (stacked with two stacks having ends butted together), unlined boxes required 68 hrs. for removal of ¾ of the field heat, whereas film-lined boxes required 79 hrs.—an increase of 16%. When the same kinds of packages were stacked with both ends exposed to the air stream, the unlined boxes required 50 hrs. for removal of ¾ of the field heat and the film-lined boxes required 73 hrs.—an increase of 46%.

Tests with poly liners in orchard boxes of loose fruit showed that boxes provided with individual film liners and stacked in double rows with ends butted together required 108 hrs. for ¾ cooling in comparison with a 33-hr. cooling time for unlined boxes similarly stacked. Pallet loads of field boxes of apples (each pallet being covered with a large

polyethylene shroud) required 66 hrs. for $\frac{3}{4}$ cooling as opposed to 29 hrs. for a similar pallet load without the polyethylene cover.

Problems and precautions

1. Research results describing use of polyethylene liners for a particular variety of apple, pear or other fruit are very specific. Similar results probably would not be obtained with another variety, another storage temperature or a different thickness of film. Although sealed polyethylene liners are beneficial for three or four named varieties of pears, it does not follow that they can be used to advantage on other varieties. Satisfactory results with liners usually rely on a certain film having sufficient permeability to O_2 and CO_2 at a certain temperature for a specific commodity.

2. Only good-quality, sound fruit, free of orchard infection, should be stored in polyethylene-lined containers. This is sound advice for storing any fruit, but high relative humidity maintained within a film liner improves conditions for decay development. Washing fruit with an effective fungicide before packing is an added precaution.

3. Fruit storage-house managers should try any new use of polyethylene liners only on a small scale at first and convince themselves that desired improvements in quality maintenance can be obtained. If a liner lacks sufficient permeability for a fruit at a certain storage temperature, the flavor may be damaged, internal breakdown may be increased or there may be physical evidence of CO_2 injury.

4. Good sealing and freedom from leaks usually are important where a modified atmosphere is needed in a film liner. However, in corrugated cartons with cell- or tray-packed fruit, the atmosphere is modified considerably just by folding a liner over the top of the fruit without sealing. Usually it is the modified atmosphere that reduces the rate of ripening, helps maintain freshness and increases storage life. Any hole in a liner produced by contact with rough box shook or any leaking seam or closure may prevent the formation of the necessary modified atmosphere.

5. Sealed polyethylene box liners must be slit or perforated when the fruit is removed from cold storage or from refrigerated transport. This lets in O_2 and prevents too high a build-up of CO_2 at the warmer temperatures encountered in marketing. Fruit flavor will be damaged in a short time if liners are left sealed.

6. Commercially extruded polyethylene of more uniform gauge is needed. Currently, some film specified to be 1.5-mil thick may range from 1.2 to 2.0 mils. A narrower tolerance on film gauge will help advance new box-liner uses. A film supplier receiving an order for 1.5-mil box liners for fruit storage should not send 1.7- or 2.0-mil liners as being close enough. Fruit may be damaged by the thicker film. Fruit packers also should be aware that many types of polyethylene are now available and be more specific in ordering, especially if they have had previous experience with a certain type.

7. More information on polyethylene permeability to O_2 and CO_2 is needed. Research workers are finding large variations in O_2 concentrations that develop in packed boxes of fruit, all with the same type of liner. What individual variations in liners are responsible for this? A polyethylene film with greater permeability to CO_2 than that possessed by current types is needed for storage of pears. Polyethylene liners currently used for pears sometimes allow a CO_2 level of 5-6%, which sometimes causes damage. A CO_2 level of 2-3% in pear liners would be more desirable.

8. More information is needed on suitability of various types of conventional polyethylene for box liners. Do the different types of 1.5-mil polyethylene, which have slightly different densities, produce similar results with fruit? Tests conducted in 1957 with several types of polyethylene indicate that variations in film *thickness* cause greater differences than variations in film *density*. Research workers themselves have not obtained consistent results with film liners for some fruits, even when using the same type each year. Although progress with polyethylene liners and wraps for fruit has been rapid, many problems remain to be solved.

Figure 5. Lugs of sweet cherries with 1.5-mil polyethylene liner, shown before sealing (left) and after overlap seal has been applied (right).

Acknowledgements

The authors express their appreciation to John N. Kelley, Fruit Dispatch

[*Continued on page 197*]

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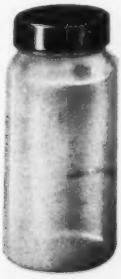

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Climate and shelf life

Q: *We have recently installed a number of test cabinets and rooms operating at various temperatures and humidities. The units will be used for laboratory testing of various packages and products to evaluate their protective qualities and requirements. It would be helpful if there is a method of converting these laboratory storage values into shelf life in different climatic locations. Is there a reliable and acceptable formula for this conversion of laboratory data to field results?*

A: There is no conversion factor for translating laboratory package-storage test data into commercial shelf life in various climates. The climate of a given area is based on long years of weather recording which establish a typical and seasonal general pattern. The temperature and humidity over a period such as a year will reasonably follow this climatic pattern.

However, at any given time or even for a period as long as a month the atmospheric conditions can be at considerable variance from the normal or average long-time behavior. This means that packages going into an area during a sustained variation from the typical climate would be exposed to substantially different conditions of storage. Also, some areas exhibit large differences in humidity and temperature between summer and winter weather.

Weather variation is only one factor that can affect the shelf life of packaged products. Other factors are the wide differences in store storage conditions, which can vary between an air-conditioned atmosphere and excessive temperature and humidity. There is also wide variation in the actual temperature and humidity within a given area, depending on the location.

Laboratory tests performed in atmosphere-controlled rooms are a reliable and rapid method of determining the degree and kind of package and product performance. Such tests, when made with controls of known commercial performance, are useful for package research and development. Such laboratory data, used with judgment and experience, enable development of packages to meet any shelf-life requirements. Unfortunately, there is no conversion factor that can be used in place of experience and judgment in converting laboratory data to commercial shelf life.

Polyethylene-film strength

Q: *We have been trying sample orders of some of the newer polyethylene resin films to make a 2-lb. bag for dried beans. Our drop tests show that some of these sample films show splitting of the bags, while our regular bags show no failure. We would like to use these newer films because of their better transparency and appearance. Why do the newer polyethylene films tend to split easier than do present films?*

A: The polyethylene films with better transparency and surface appearance that you have been testing are made from resins of higher density than the older resins.

Depending on their process of manufacture and their density, these resins have less branching in their molecular arrangement and as branching is reduced, density is increased. Unfortunately, these molecules with less branching tend to orient themselves in the direction of flow during the film-making process. This means that such film can have higher strength in the web direction than it does across the web.

A drop test of a bag with such a free-flowing product as dried beans is a very practical and reliable method of showing the unsymmetrical strength of such a film. Film makers are very aware of this problem of producing strong films for bag use from the higher-density polyethylene resins and will eventually solve the problem. Meanwhile you should continue your tests with films from various suppliers to find which grade and type of the newer resins will meet your requirements.

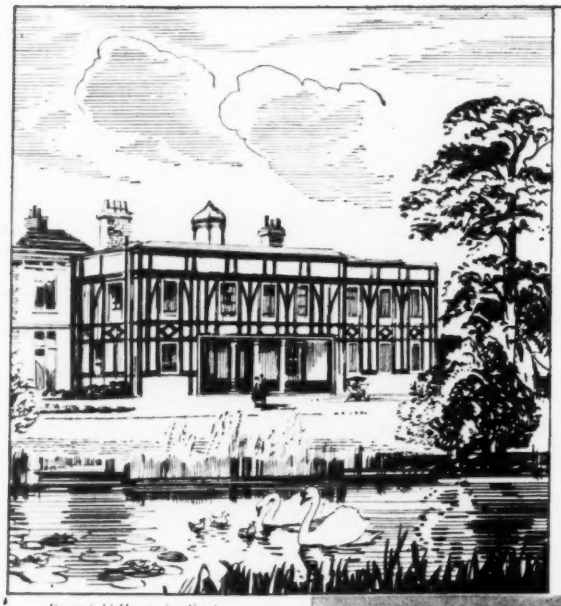
Problem of caking

Q: *One of our products is a mixture of several ingredients and the final blend requires a package with some moistureproofness. For many years we have used a waxed-paper-lined carton with good results. Occasionally we have complaints of some caking after long shelf storage in the summer months. A year ago, we improved the shelf life of this package by using an anhydrous type of one of the ingredients. Our field survey showed that this change caused more severe and rapid caking than with the old formulation. Why should the use of an anhydrous ingredient make the product easier to cake?*

A: There are two important characteristics of a product that determine its stability in a humid atmosphere. One is the equilibrium humidity of the product (the humidity at which the product absorbs or loses moisture). The other is the amount of moisture that a product can absorb before it becomes unacceptable by caking or other change.

The use of an anhydrous form of one of the ingredients caused a lowering of the equilibrium humidity of the mixture and this means that under humid conditions the new product would absorb moisture faster than the old product. This greater amount of moisture going into the product caused more severe caking.

The best answer to your problem is to return to the old product formula and to use a waxed-paper liner of improved moistureproofness.



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Equipment and materials

New polymer-coated films

Two high-yield types of polymer-coated cellophane, one designed for baked goods and the other for bag fabrication, are announced by Du Pont. The new 300 K-202 film, with a yield of 19,500 sq. in. per lb., is said to give excellent machine performance and durability for such items as candy, nuts, potato chips, biscuits and other products requiring long shelf life. The second film, 300 K-201, is designed specifically for baked goods, where ingredients can affect performance of the packaging material. This film yields 21,000 sq. in. per lb. and is said to offer excellent package appearance and longer protection at low cost. It will remain smooth during use and is unaffected by grease or oil. The two new packaging cellophanes, which bring to five the number of polymer-coated films in the company's K series, will be put in large-scale production at a new plant now under construction in Tecumseh, Kans. *E. I. du Pont de Nemours & Co., Wilmington, Del.*

Blister-package assembler

Colton has introduced an air-powered, automatic machine for assembling blister packages at rates of up to 48 per minute. As shown, the unit has a 42-in.-diameter index table on which six rubber dies are mounted. To operate the machine, the operator places an assembly—made up of the product, a blister and a pre-glued display card—into each of two pockets at the open stations. The table indexes each die in sequence around to station six, where the pre-glued units are pressed together by an arbor press (mounted at the right of the machine). The arbor press is equipped with controls that provide an adjustable dwell time for the platen after the ram comes down. The air cylinder on the arbor press exerts a pressing force of 800 lbs., to insure permanent assembly of the blister pack. *Snyder Tool & Engineering Co., Arthur Colton Co. Div., 3400 E. Lafayette Ave., Detroit 7, Mich.*

New metallized paper

A low-cost metallized paper almost identical to aluminum-foil lamination in appearance has been introduced by Shellmar - Betner. The new paper product is metallized by processing it in roll form in a vacuum chamber where pure aluminum is deposited on it. As demonstrated in the accompanying photo, one of the properties of the gleaming paper is that it lends itself well to printing, which suggests its use as a labeling or wrapping material on cans, bottles or cartons. Experiments conducted by Shellmar-Betner indicate that the new paper development handles easily on existing labeling machines. According to the company, the material is expected to simplify can- and bottle-labeling operations at packing plants because its composition permits the adhesive to dry quickly and, since moisture can penetrate it, label removal during bottle washing is greatly facilitated. The material is now commercially available in limited quantities, but large-scale production facilities are being installed at company headquarters. M. L. Schechtman, product sales manager for laminates, is in charge of metallized-paper sales. *Continental Can Co. Shellmar-Betner Div., Mt. Vernon, Ohio.*

Fast-action film adhesive

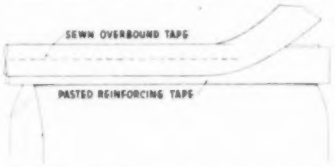
A fast-grabbing, solvent-based cement for bonding cellulose acetate film to itself and to other surfaces has been developed by Adhesive Products. The adhesive, called Cellugrip, reportedly produces shock-resistant seams and moistureproof bonds that are not affected by weak organic acids, mineral, animal and vegetable oils or gasoline. Other cited advantages of the material are: (1) its low viscosity means it can be used sparingly to provide a strong bond, even in low-gauge acetate film, without wrinkling; (2) it dries transparent and may be used to fill in irregularities between molded sections, and (3) it dries rapidly and leaves no residual odor. *Adhesive Products Corp., 1660 Boone Ave., New York 60.*

Case loader for multipacks

J. L. Ferguson has introduced a convertible case-loading machine that automatically loads eight six-pack or 16 three-pack carry cartons of 12-oz. cans into corrugated shipping containers. The new Packomatic unit is shown here in operation at P. Ballantine & Sons Brewery, Newark, N.J. One feature of the device is that it up-ends the loaded container automatically for conventional sealing (see photo). Other Packomatic equipment is available to pack eight six-packs or four six-packs of 12-oz. cans into end-loading shippers. The device, said to effect savings in paperboard, also can be custom engineered to adapt to multican packs of soda, juices, vegetables, soups and other canned products, the company claims. *J. L. Ferguson Co., Route 52 at Republic Ave., Joliet, Ill.*

New multiwall closure

Its new "Sew-Strong" closure for open-mouth multiwall bags results in a stronger bag while reducing basic package weight at least 10%, claims Union Bag. The improvement consists of reinforcing tapes which are fastened to both ends of the bag at the sewing line (see illustration). This reinforcement strengthens the bag ends, where most breakage occurs, and also means that less paper is needed to construct a stronger bag, the company says. *Union Bag-Camp Paper Corp., 233 Broadway, New York 7.*



Filler for semi-solids

A high-speed automatic filling machine for such slow-flowing semi-solid products as putty and glazing compound has been introduced by Hope Machine. The machine fills 1-, 3- or 5-lb. cans at speeds up to 40 per minute and

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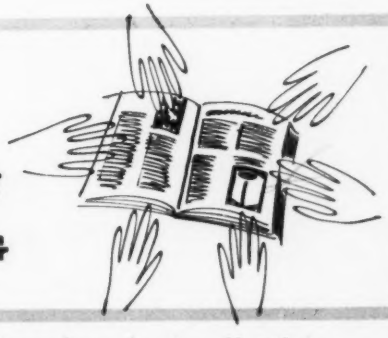

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Reproduce your present label just as it is on Sensi-Stick or consider a new design with a choice of gold or silver foil, embossed; lustrous papers and sparkling inks to add an extra note of quality to your product. Use Sensi-Stick to show you the way to the world's fastest hand labeling operation.

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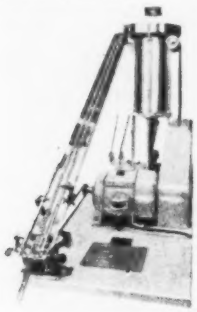
Equipment and materials

change-over from one size to another is accomplished in 30 to 40 minutes, the company says. After containers have been moved into filling position, a feeding mechanism moves the product from a hopper into a manifold chest above three operating valves. The action of the piston-filling arrangement draws into each cylinder the exact quantity of product to be deposited. At the moment of discharge, a rising table lifts the containers so that complete, bottom-up fill is obtained. Simultaneously, a cutting mechanism shears the column of semi-solid product at the nozzle edge to prevent smear, wipe-off or dropping. After filling, the containers move to an automatic parchment-disk placer and then to the closing station. *Hope Machine Co., 9400 State Rd., Philadelphia 14, Pa.*

High-speed counter

From Western Germany comes the Rotax Model H counting and filling machine, designed for the fast, accurate counting and filling into various types of containers of such items as lozenges, tablets, ball bearings or other small units ranging in diameter from 9/32 in. to ½ in. Shown here, the machine is equipped with a double chute, two filling stations and an oscillator which feeds the chute. Exact-fill count at high speed is guaranteed by measurement of unit diameters in the chute, claims The Burnet Co., U.S. distributor. Other reported advantages of the machine are that it offers quick change-over from product to product and dependable stacking when filling into vials. The electric-operated device measures 62 by 25 by 42 in. and is finished in white enamel. *The Burnet Co., E. Midland Ave., Paramus, N.J.*

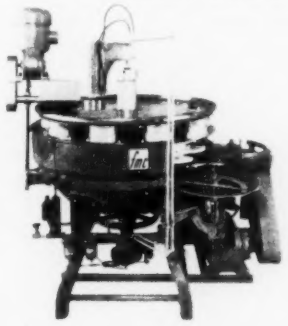


New leasing plan

Peters Machinery announces the development of a leasing plan for its high-speed automatic packaging machinery. American Industrial Leasing Co., Chicago and Los Angeles, is the leasing affiliate. The company points out that, in addition to the new leasing plan, its equipment also is available under standard purchase policies. *Peters Machinery Co., 4700 N. Ravenswood Ave., Chicago 40.*

Filler for produce

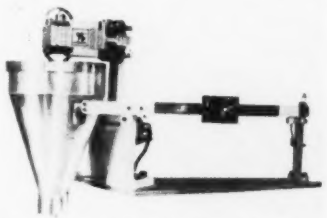
Reduced labor costs reportedly can be obtained with FMC's new Press-Pack filler for green beans and other canned fruit or vegetable products. A modification of the company's Hand Pack filler, the new machine, shown here,



employs a mechanical plunger—operating at 400 lbs. pressure—that automatically presses the product into the container. According to the company, this device assures accurate fill weight and also eliminates the former necessity of three or four employees using hand plungers to achieve the same result. The machine has a rated capacity of up to 40 No. 10 cans per minute, up to 120 per minute on cans of smaller diameter. *Food Machinery & Chemical Corp., Canning Machinery Div., 333 W. Julian St., San Jose 8, Calif.*

Liquid-weighing unit

More accurate measurement of liquid fill, without the problems of volume control, is obtained by weighing the product on its new Automatic Liquid Weigher, says Glengarry Processes. The stainless-steel unit comprises a weigh tank (left in photo) mounted



on a beam, with an adjustable poise. Above the weigh tank is a pneumatic bulk-and-trim flow valve which connects by flexible tubing to the supply tank. In operation, the poise is set for the desired weighment (1 oz. to 10 lbs.) and the control switch is turned on. The liquid then flows rapidly into the tank, diminishing in volume as the preset weight is approached. The diminishing flow assures accurate final weight, the company says. When proper weighment is achieved, the flow valve shuts itself. The unit has a rated capacity of 10 lbs. per minute. Special adaptations of the machine, including units of greater capacity, are available. *Glengarry Processes, Inc., Bay Shore, N.Y.*

Foil-like polyester

A new heat-sealable polyester film that looks like aluminum foil but can be flexed almost indefinitely without affecting film properties is available from Minnesota Mining. The 2-mil film (No. 20A20) is a metallized version of the company's Scotchpak brand polyester film. It is designed for packaging applications where low water-vapor and gas permeability and appearance are important factors. The new film has a tensile strength of 8,000 lbs. per sq. in. and a burst strength (Mullen) of 40 lbs. per sq. in. It retains its properties in a temperature range of minus 70 deg. F. to 230 deg. F. and it displays excellent heat reflectivity with low heat conductivity, the company claims. *Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minn.*

Lab crimper for aerosols

An air-operated laboratory crimper adaptable to various types of aerosol containers is available from Mojonnier Associates. Shown here in operation, the unit is capable of handling both standard metal and glass aerosol containers, the latter either coated or uncoated. It is supplied with either can or bottle heads or both.

Quickly interchangeable collets provide the device with its flexibility of operation, according to the company. Aside from its versatility, the unit's light weight and compact construction make it ideal for laboratory use, the company claims. A brochure explaining the device in detail is available upon request to the supplier. *Mojonnier Associates, Inc., 9151 Fullerton Ave., Franklin Park, Ill.*

Easy-opening can-end bag

Designed for use with today's higher-speed can-closing machines is Central States Paper's new kraft-paper can-end bag. Called Flik-Opener, the bag has a specially constructed bottom to facilitate quick, easy opening, as its name implies. A small flap on the bottom of the bag is left unglued. When ready for use, a slight tug on the flap opens the bag bottom to release the can ends. The large lip which results helps the operator hold onto the lids while inserting them into the can-closing machine. The fast, hand-opening operation

Equipment and materials

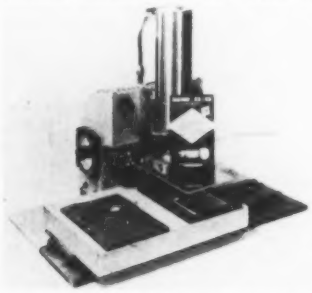
(requiring no knife or other sharp implement) adds a safety factor and also increases employee efficiency, the company claims. Bags are available in a variety of sizes. *Central States Paper & Bag Co., 5221 Natural Bridge Ave., St. Louis 15, Mo.*

New cellophane wrap

A new cellophane for wrapping fresh meats—said to be superior in many respects to standard cellophane, yet lower in price—has been introduced by Olin Mathieson. Called Olin OF-16, the film is easy to handle, is protective and retains the appearance of fresh meat more effectively, the company claims. Tests reportedly show that the film absorbs moisture four times faster than conventional fresh-meat cellophanes, permitting oxygen to reach the meat more quickly. Another cited advantage of the material is that moisture spreads evenly on the under side of the film, thereby maintaining uniform color on the meat. Price of the film is 65 cents per pound. *Olin Mathieson Chemical Corp., Film Div., 655 Madison Ave., New York 21.*

Bubble heat sealer

The Seal-A-Pac bubble heat sealer, designed for heat sealing clear plastic bubbles on printed backing cards, has been added to Plastic Packaging's line. A two-cavity locating fixture permits constant machine operation. While one



cavity is being loaded with the plastic bubble and the item to be packaged, the other cavity is being sealed. The two-cavity fixture, constructed of hardwood, can be made to conform to individual requirements, the company says. The electric-operated machine reportedly seals one package every four seconds. *Plastic Packaging Machinery Co., Inc., 8823 Renton Ave., Seattle 18, Wash.*

Automatic web splicer

A fully automatic web splicer, designed to eliminate down time caused by roll changes, is being marketed by Butler (see "Flying Splicer for Overwraps," MODERN PACKAGING, Dec., 1957, p. 102). The unit integrates with overwrap machines to splice a new roll of wrapping material to the depleting roll at the last full-printed panel of the latter. Registration is completely automatic and the operation is performed without stopping the wrapping machine. Two models of the splicing machine, SPL 100 and SPL 125, are offered. Each occupies about 4 sq. ft. of floor space. *Butler Automatic Machine, Inc., Monson, Mass.*

Semi-automatic filler

Exact discharge of any quantity from eight to 16 oz. and filling speeds of up to 40 containers per minute are said to be possible with Anderson Bros.' new Model 377 semi-automatic cottage-cheese-filling machine. Shown here, the foot-operated unit has a double-action piston that simultaneously fills one container and prepares the filling cylinder for discharge into the next. The two piston heads are joined by an adjusting screw with which the machine operator pre-measures the desired fill. To insure uniform fill, the unit also is equipped with an auxiliary power-driven ram for positive emptying of the filling cylinder. Its stainless-steel hopper has a capacity of 160 pounds. Casters mounted on the legs of the machine enable it to be moved easily to any desired place on the packaging floor. *Anderson Bros. Mfg. Co., 1907 Kishwaukee St., Rockford, Ill.*

High-impact plastic cups

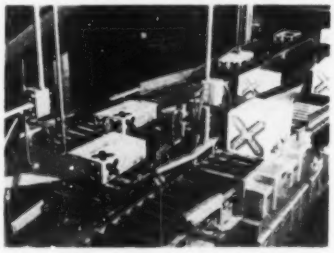
Mutual Plastic Mold is now offering its Tru-Weight line of 16-oz. salad cups in high-impact polystyrene. Improved construction gives its containers longer life expectancy and the ability to withstand harder usage, the company says. *Mutual Plastic Mold Co., 5141 Firestone Pl., South Gate, Calif.*

New Eastman polyethylene

A new medium-density polyethylene which reportedly offers improved properties for use as a film in bagging and packaging machines is available from Eastman Chemical. Designated as Series 100, the new Tenite polyethylene also provides greater stiffness, higher heat resistance and greater resistance to abrasion in molded products, the company says. Film extruded from it is said to be stiffer, with less tendency to block, and it can be slipped without the incorporation of additives. Manufacturers of plastic bottles can use the material to produce rigid, thin-wall containers with less permeability to various chemicals, oils and aqueous solutions, according to the company. *Eastman Chemical Products, Inc., Kingsport, Tenn.*

Case-goods segregator

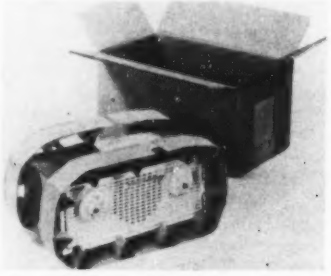
FMC has introduced an automatic case-goods segregator that reportedly offers large savings in conveyor costs. Instead of requiring separate single lines of conveyors for each size of case goods handled, the device permits the user to run all his case sizes on a single con-



veyor until they reach the segregating unit, which then measures them and shunts them on to the proper conveyor. The accompanying photo shows the unit in operation at the Lucky Lager Brewing Co. As each case from the single line enters the segregator (left), mechanical fingers measure case height and length, then send the case either straight ahead on the original conveyor or transfer it left or right to parallel conveyors, depending on case size. The unit can handle cases of any weight measuring up to 25½ by 17 by 12½ inches. *Food Machinery & Chemical Corp., Material-Handling Section, Riverside, Calif.*

Fibreboard wrap-arounds

A pre-formed fibreboard wrap-around packaging material designed for block, space or cushion protection of fragile products during shipment is available from Vanant Co. Called SUS-RAP, the material is individually engineered to



the product and to customers' packaging requirements, according to the supplier. Shown in the accompanying photograph is the product being used to protect a radio in its shipping carton. The suspension-shipping material can be adapted in various ways to protect

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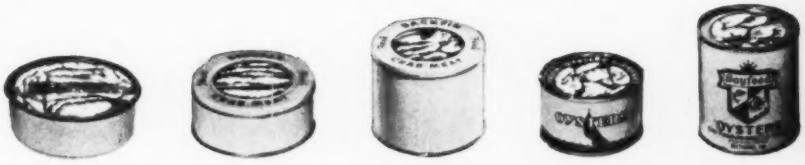
American Can Co., New York, Chicago, San Francisco
Eagle Can Company, Somerville, Mass.
Windows formed for Eagle Can Company
by William A. Crook Company, Watertown, Mass.

THE CAN WITH THE WINDOW



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These smart window cans stimulate the impulse buying of perishable foods, such as lobsters, oysters, and crabs. The full visibility of the acetate window invites the customer's interest... promotes his purchase. And because it's a window of Celanese acetate, it resists fogging, retains its sparkling transparency. Celanese acetate "breathes"—is permeable to moisture vapor.

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Equipment and materials

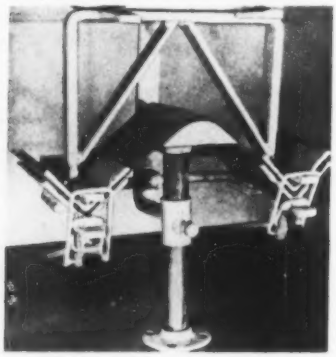
other breakable items, such as plate glass, from in-transit damage. Use of the material also lowers packaging costs and shipping weight, the company claims. *Vanant Co., Inc., 952 S. Water St., Milwaukee 4, Wis.*

Printed-circuit photo-relay

Photobell Co.'s new printed-circuit photo-relay is designed for use on packaging machinery where there may be dust, vibration, humidity, high temperature or severe voltage fluctuation. Easily installed and replaced, the relay is reported to be suitable for any counting, control or detecting circuit. *Photobell Co., 43 Vesey St., New York 7.*

Tester for corrugated cases

Bathurst Power & Paper has developed a mechanical device for determining the strength of the manufacturer's joint in corrugated containers. The company has appointed Testing Machines as sole manufacturer and distributor of the unit, known as the Bathurst Manufac-



turer's Joint Tester. The unit exerts force on a 6-ft. sample of the corrugated joint (see photo). This pressure, the company claims, is similar to that experienced by the actual container carrying a full load of canned goods and supplies valuable information regarding the ultimate strength of the shipper. The object is to develop improved corrugated cases and to reduce damage loss. *Testing Machines, Inc., 123 W. 64 St., New York.*

Printed stock backgrounds

Colorful printed stock backgrounds, designed for overprinting with copy in one color, are being offered to tag users at no extra cost by Rothchild Printing. Each of the background patterns available is printed in various shades of Metl-Glo printing inks. The air-brush designs add sales appeal to monotone tags, the company says. *Rothchild Printing Co., Tag & Label Div., 52 E. 19 St., New York.*

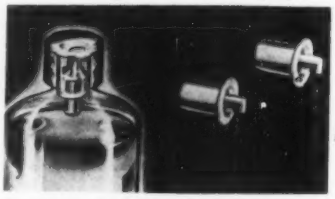
Fibre drum with poly liner

Offered as a lighter, more practical shipping container for transporting dry or liquid dyes and chemicals is this new two-piece "Perma-Plex" unit (polyethylene liner and fibre drum) from National Steel Container. One reported

advantage of the Du Pont Alathon polyethylene resin liner is its slick, anti-stick coating, which permits removal of all shipped material from the container, leaving no residue that would require extensive cleaning of the shipper before re-use. The semi-rigid liner fits snugly inside the fibre drum. A prefabricated lip (see photo) at the top of the liner fits tightly over the chime of the drum. Heavy-duty polyethylene cemented to a standard metal closure then is fitted over the top of the drum to give an air- and liquid-tight seal when clamped in place with a lever-action closing ring (foreground). The container is available in 30- and 55-gal. sizes. For protection during storage, the fibre drum's steel bottom is raised about $3\frac{1}{2}$ inches. *National Steel Container Corp., 6700 S. Leclaire St., Chicago.*

Drop-or-flow dispenser

A fluid-dispensing device with packaging application to a variety of free-flowing liquids has been introduced by Park Plastics. Shown in the illustration, the device consists of two molded polyethylene parts (main plug and inner plug spout) and a stainless-steel spring. When the bottle closure is removed, the spring forces the plug spout up above the lip of the main plug for



pouring ease. When the closure is replaced, the plug spout is forced back down into the main plug (see cut-away section at left). The main plug has a slot in the bottom that functions for both air intake and return of excess drops to the bottle. The fluid-emission hole in the spout is available in several diameters, so that the product can be dispensed in drops or continuous flow, as desired (see right). After pouring, the last drops fall back inside the main plug into the bottle, preserving the appearance of bottle exterior, the company says. Standard bottles and screw closures can be used with the pouring unit. Automatic insertion of the device into bottle necks is accomplished by conventional bottle-corking machines. *Park Plastics Co., 104 E. Elizabeth Ave., Linden, N.J.*

Register-mark rubber plates

Mosstype has introduced stock rubber plates with "Register Bullet" marks for mounting directly to plate cylinders on multicolor rubber-plate printing jobs, to assure accurate color register. Each plate contains 54 circles of 1/8-in. diameter and an equal number of 1/16-in. bullets. As many circles are mounted on the key color cylinder as there are colors on the job, while one bullet is placed on each remaining cylinder. Location of bullets in respect to circles on the print shows whether colors are in register. The re-usable plates are available in natural or synthetic rubber. *Mosstype Corp., 150 Franklin Turnpike, Waldwick, N.J.*

Parts feeder and counter

U.S. Engineering's new Disc-O-Matic parts feeder and counter is said to orient, feed and count a variety of small products at high speeds. The unit shown is used to handle rolls of cotton 3/8 in. in diameter by 2 in. long. Other items that reportedly can be handled by the machine include bottle caps, tablets, pills and candies. The 20-by-18-in. unit consists basically of a flat rotating disk which utilizes centrifugal action to discharge parts in an oriented manner at high or low speeds, depending on the product. The discharge track can be horizontal or it can be curved vertically, as shown, to feed into assembly machines or for other operations. *U.S. Engineering Co., 40-42 22 St., Long Island City, N.Y.*

Poly bag ventilators

Available from Kennametal are carbide die inserts for punching ventilation holes in polyethylene produce bags. Cited advantages of the die inserts, which are fitted onto bag-making machines, are: (1) long service life, assuring longer production runs and reducing the frequency of shutdowns for changing dies and (2) they produce clean-cut holes, thus reducing scrap loss to a minimum. *Kennametal, Inc., Latrobe, Pa.*

polyethylene

+ STOKESWRAP

= **maximum protection**
in flexible packaging for...

fruits and vegetables

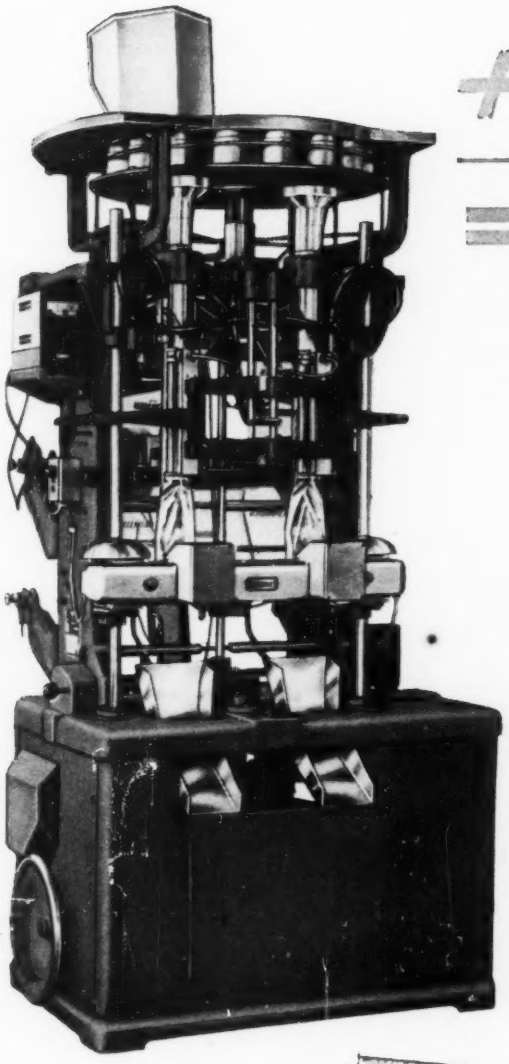
hardware

chemical powders

frozen foods

candy **detergents**

and many other products



Positive Seal—No Film Waste

Impulse sealing provides for the cut-off right at the seal, eliminating the tabs of conventional sealing resulting in substantial film savings.

To assure flexible packaging with maximum protection of the contents, STOKESWRAP forms clear or printed polyethylene film into a pillow type package having exceptionally high strength and resistance to rupture. This development makes possible the packaging of products heretofore too heavy to be satisfactorily handled by other materials.

A new impulse principle for sealing the polyethylene web results in strong, positive seals and eliminates film waste as well. Electric eye registration of printed film, sealing and cutoff are all achieved in one simultaneous automatic operation at high speed. The web is held in constant tension, with no reversing, for smooth, trouble-free operation.

A wide selection of feeds...pocket, auger, tablet counting, liquid, net-weight scale and special mechanisms . . . make STOKESWRAP well suited for low-cost high-quality polyethylene packaging of a great variety of products.

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

For complete information, write to:

FMC PACKAGING MACHINERY DIVISION

Stokes and Smith Company

4904F SUMMERDALE AVE.
PHILADELPHIA 24, PA.

Plants and people

Payton

Reynolds Metals Co., Richmond, Va., has established a rigid-container division for the marketing of aluminum containers. **L. R. Payton** will head the division, locating in Richmond. **Milton F. Jones** has been appointed regional manager of packaging sales for Reynolds' South Central region. He succeeds **John J. Geiss**, now in charge of packaging at the Detroit office.

The Champion Paper & Fibre Co. of Hamilton, Ohio, has acquired half ownership of **NRC Vaculite Corp.**, Cambridge, Mass., a subsidiary of **National Research Corp.** The joint company is to start a major program to commercialize its new vacuum-metallized paper for packaging, building insulation and other applications.

Champion also has established 18 additional warehouse locations for distribution of its entire line of printing papers in the Western states.

Marvell A. Olsen and **James M. Connors** have been elected vice presidents of **Breskin Publications, New York**, publisher of MODERN PACKAGING and *Modern Plastics*. Mr. Olsen, who joined the organization in 1935 as a sales representative, was named general manager of the firm earlier this year and will continue to hold this position. As vice president for Western operations, Mr. Connors will remain in charge of the firm's Chicago office, a post he has held since joining Breskin in 1938.

Olsen

Connors

Morningstar-Paisley, Inc., is the new corporate name evolved from the merger of **Morningstar, Nicol, Inc.**, with **Paisley Products, Inc.**, both New York.

Philip M. Liner becomes Eastern sales manager. **H. R. Callahan** has been appointed administrative sales manager; **Arthur Mayer**, manager of special-products department; **Mortimer E. Stern**, director of technical-market development, and **Edward Bearman**, manager of the adhesive-development laboratory. **I. G. Nicol**, assistant sales manager, will also supervise New York metropolitan area sales. **Samuel Tisser** is now manager of the latex and plastisol department.

A. V. Petersen has been elected vice president and sales manager of the packaging-machinery division of **Lynch Corp.**, Anderson, Ind. **Robert McVicker**, chief packaging engineer, **Robert Wiley** and **Jack Hopping** have been appointed to the company's management committee.

Thomas O. Williams has been promoted to general sales manager of the Film Div., **American Viscose Corp.**, Philadelphia, Pa. He succeeds **John W. Little**, who has retired. Mr. Williams, who moves up from assistant sales manager, joined the company in 1943 as a salesman in the Philadelphia office.

Williams

Little

O. B. Mason has been appointed to the new post of corporate director of organization of **The Mead Corp.**, Dayton, Ohio. **George H. Sheets** has succeeded Mr. Mason as division manager at Mead's Chillicothe (Ohio) Division. **Edward H. Niederauer** has been named general manager for the company's white-paper operations and **P. Frank Winkler** becomes general manager for board operations, both new posts. **Vinson K. Shannon** succeeds Mr. Niederauer as manager of Mead's Kingsport, Tenn., mill, while **Paul Ellis** succeeds Mr. Winkler as production manager for 0.009-board operations. **James F. Stevenson** has been promoted to manager of the Lynchburg, Va., mill. **Charles H. Horch** succeeds him as manager of the Wheelwright Div., North Leominster, Mass.

Mead Containers, Inc., a wholly owned subsidiary of The Mead Corp., will acquire the total assets of **Ottawa River Paper Co.**, Toledo. The company will be operated as the **Ottawa River Div.** of Mead Containers. No personnel or management changes are planned. **Philip LeBoutillier, Jr.**, president of Ottawa River, will continue to manage the division. He also becomes a Mead vice president.

Jamison

R. B. Jamison has been appointed sales manager at the Cincinnati, Ohio, plant of **H. B. Fuller Co.**, St. Paul, Minn. He will be responsible for sales in Ohio, Michigan, Indiana, Kentucky and West Virginia. Mr. Jamison has been with the Fuller organization for 10 years.

Stanford H. Collins has been appointed plant manager of its Cincinnati paperboard mill by **Container Corp. of America**, Chicago. **Raymond M. McDaniel** is now plant manager of the company's Noblesville, Ind., strawboard mill.

Container Corp. recently opened a

Christopher W. Browne, former Editor and Editor-in-Chief of MODERN PACKAGING and *Modern Packaging Encyclopedia* and one of the most widely known men in the packaging and marketing field, died Dec. 23 in New Woodstock, N.Y., and was buried Jan. 3 near his home in Sherman, Conn. He was 71.

C. W. Browne

Formerly manager of marketing service for United States Printing & Lithograph Co. in Cincinnati, Ohio, Mr. Browne became Editor of MODERN PACKAGING in 1941 and was in charge of these publications during the war years, at a time when business publications were subject to severe restrictions while carrying heavy responsibilities to the war effort. He became Editor-in-Chief of both publications in September, 1943.

Victim of a progressively crippling nerve ailment, Mr. Browne was forced into gradual retirement from active duty, but in recent years retained his association with these publications as Advisory Editor. His advice and counsel were invaluable to the staff members who carried on.

Mr. Browne was born in Salem, Wis., in 1887. He was educated in Chicago public schools and was graduated from Beloit College. During World War I he served in France as a first sergeant with the 19th Engineers, U.S. Army. After varied experience in selling, marketing, sales promotion and advertising, he joined U.S. Printing and for 11 years was head of its Marketing Service Bureau.

He had been a lecturer on marketing at the University of Cincinnati and a special lecturer at the Central Academy of Commercial Art in that city. He served as president of the Advertising Club of Cincinnati and of the Cincinnati Marketing Assn.

Mr. Browne is survived by his son, Robert C., a fellow in the Maxwell Graduate School of Syracuse University; two brothers and two grandchildren. He was preceded in death two years ago by his wife, Grace.

Ceiling's the limit . . . with Hinde & Dauch boxes. How do your boxes stack up? Sturdy H & D boxes have stacking strength built in. They stand straight. For top to bottom product protection, better see H & D.

HINDE & DAUCH

Division of West Virginia Pulp and Paper Company

Authority on Packaging • Sandusky, Ohio • 15 Factories • 42 Sales Offices

Plants and people

$6,000,000 paper mill in Santa Clara, Calif., giving the company's California Container Corp. division its first combined paper mill and folding-carton facility. The parent corporation also has begun construction of an annex to its Valley Forge, Pa., plant.

W. R. Grace & Co., Polychemicals Div., New York, simultaneously announces the completion of the first building in its $5,000,000 Washington Research Center, located at Clarksville, Md., and the dedication of a low-pressure-poly-

ethylene plant in Baton Rouge, La. The research center (see photo), which will contain a section devoted to experiments in polymer chemistry, will be directed by **William P. Gage**, president of the Grace Research & Development Div., and will employ more than 160 chemists, physicists, engineers and technicians. The new $20,000,000 high-density-polyethylene plant went on stream last November. Annual capacity of the plant is expected to reach 50,000,000 lbs.

Earl E. Gray has been elected president of **Caspers Tin Plate Co.**, Chicago, succeeding **Bertram W. Bennett**, now chairman of the board.

Milton F. Antoville has been elected vice president in charge of sales for the **Allen Hollander Co.**, New York. **Arthur L. Berman** has been appointed executive assistant to the president of the company.

Ernest Williams has been named sales-promotion and advertising manager of **National Metal Edge Box Co.**, Barrington, N. J. For the past 11 years, Mr. Williams had held a similar position with Equitable Paper Bag Co., where he established and supervised that company's new-products-development section.

Williams

Gerald T. Green has been appointed folding-carton sales manager for national accounts by **Consolidated Paper Co.**, Monroe, Mich.

R. C. Wagner has been transferred to Chicago to represent the glass and closure division of **Armstrong Cork Co.**, Lancaster, Pa. **J. R. Foley** is now working from the Milwaukee, Wis., office of the Chicago district. **T. R. Krueger** has been appointed to the Chicago office, while **D. R. Barry** and **K. L. Cox** have

Here's why America's leading cereal companies use Rhinelander

Glassine

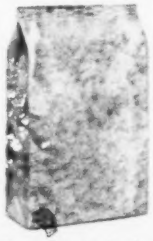
MOISTURE RESISTANCE . . . waxed,* wax laminated, or coated glassine protects crispness and full flavor. Provides a barrier to rancidity.

EASE OF HANDLING . . . The superior uniformity of Rhinelander Glassine papers means smooth performance on high speed packaging equipment.

GREASEPROOF . . . Preserves "buy appeal" . . . protects outer package from staining due to possible seepage of shortening and oil content.

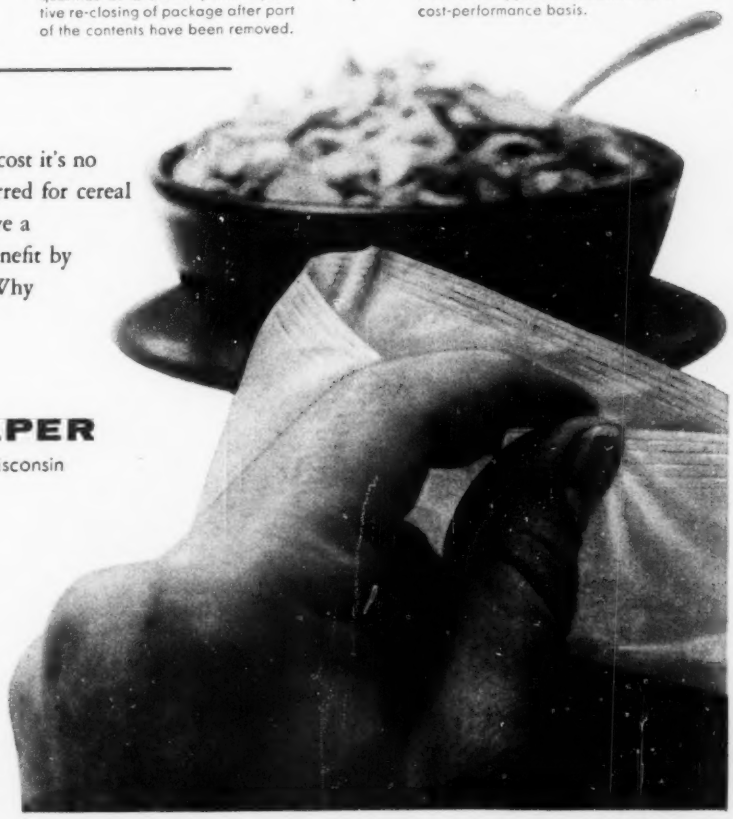
APPEARANCE . . . Glassine provides smooth, glossy appearance of quality—available in opaque or transparent grades as well as striking colors.

FOLDING . . . the excellent folding qualities of Glassine permits positive re-closing of package after part of the contents have been removed.



ECONOMY . . . Few packaging materials even approach Glassine on a cost-performance basis.

Yes, with so much to offer at so low a cost it's no wonder Rhinelander Glassine is preferred for cereal packaging protection. Perhaps you have a perishable food product that would benefit by the many advantages Glassine offers. Why not drop us a note about it?



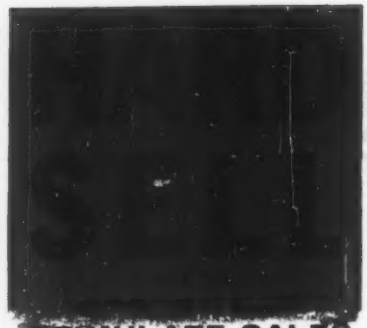
RHINELANDER PAPER

Rhinelander Paper Company, Rhinelander, Wisconsin

Subsidiary of St. Regis Paper Company

GLASSINE GREASEPROOF

*Waxed and printed grades available through leading converters



STIMULATE SALES

Wherever you turn, you will find **Able-Stik accSELLerator Spot Labels** on every type of package for that extra boost to sales.

In only inches of space, they deliver your special story effectively.

"Deals," anniversaries, premiums, product changes, contests, etc., can all be converted into HARD SELL with spot messages on labels.

One-color label, actual size, affixed to standard package to promote "deal."

Able-Stik accSELLerator Spots are pressure sensitive labels (no moistening required), stick to any surface and cut labor-time costs on the assembly line. (Ask for a demonstration!) In the field, sales and service men can make changes on the spot.

Perfect for regional, local or test campaigns. Lifesavers for correcting previously printed prices and contents or for those important last-minute decisions!

Tiny, versatile, productive and economical, they are quickly available in long or short runs to do a year-round job of HARD SELL at every stage of your marketing program.

For the HARD SELL STORY and CHECK LIST to help you do a more competitive selling job through spotlight packaging, write today to Dept. MP.

Plants and people

been assigned to the St. Louis, Mo., and Dallas, Tex., districts, respectively.

Lee Pevear has been promoted to the new post of packaging manager for **Lever Bros. Co.**, New York. **Charles H. Kitchell** has been appointed promotions-service manager, also a new post.

Hotton

J. C. Hotton has been named sales manager of the **F. B. Redington Co.**, Bellwood, Ill., manufacturer of packaging machinery. Mr. Hotton joined the company 26 years ago as a trainee in the sales department. His most recent post was supervisor in that department.

Spencer E. Palmer has been elected first vice president of **Eastman Chemical Products, Inc.**, Kingsport, Tenn., Eastman Kodak Co.'s marketing subsidiary for its two manufacturing divi-

Palmer Magoffin Williams

sions, Tennessee Eastman and Texas Eastman. **Dr. James E. Magoffin**, who will be in charge of the chemicals division, and **David C. Williams**, who will head the plastics division, have been elected vice presidents of Eastman Chemical. **John P. Tokarz** has been made assistant to Mr. Palmer. **E. C. Cathcart** has become sales manager of the plastics division, while **W. P. Bussart** has been named assistant sales manager. **Guy A. Kirton** has been appointed sales manager of the chemicals division.

Ford

Henry L. Ford has been elected a vice president and **W. Chamberlain Hale** an assistant vice president of Tennessee Eastman.

Lansdale

Scott Paper Co., Chester, Pa., has created a Staff Packaging Materials Div. and has appointed **David B. Lansdale** as head of the new division, which consolidates the packaging activities of all Scott's divisions into one coordinated, integrated program.

C. J. Da Costa has been promoted to Cleveland regional manager by **Signode Steel Strapping Co.**, Chicago. Other newly appointed regional managers are: **R. E. Jacobs**, St. Louis; **T. E. Noon**, Boston; **Almer Pearson**, New York; **S. N. Salomon**, Pittsburgh, and **J. R. Williams**, Chicago. **A. J. Link** and **M. L. Fagin** were recently appointed regional managers of the San Francisco and Cincinnati regions, respectively.

Borer

William J. Borer has been appointed sales manager of the bakery-machinery division of **American Machine & Foundry Co.**, New York. He succeeds **J. W. Regan**, resigned. Mr. Borer was formerly in the bakery-machinery division of Anheuser-Busch, Inc.

Robert Neal Black has been named to the newly created post of director of engineering for **G. Barr & Co.**, contract aerosol packagers, Chicago.

Cadillac Plastic & Chemical Co., Detroit, Mich., has been appointed national distributor for epoxy resins and hardeners by **Bakelite Co.**, New York, a Union Carbide Corp. division.

Celanese Corp. of America and **National Lead Co.**, both of New York, are collaborating in a research program on improved plastic and fibre polymers using new polymerization catalysts produced by National Lead.

Leo Morgan has been named sales manager of bleached sulphate board by **Gilman Paper Co.**, New York. He succeeds **Homer Lake**, retired.

Norman F. Greenway has been appointed executive vice president of the Robert Gair Paper Products Group of **Continental Can Co., Inc.**, New York. He succeeds **George E. Dyke**, who has retired.

Greenway

Pollard

Robert Pollard has been named manager of containerboard sales for the Gair Containerboard & Kraft Paper Div. **J. T. Hansen** has been made Philadelphia district sales manager for Continental's Southern Advance Bag operations.

Cellu-Craft Products Corp., New Hyde Park, N. Y., has completed its expansion program, which has increased plant space by more than 100%.

International Metalloids, Inc., a Puerto Rican subsidiary of **Grace Internacional, S. A.**, was recently formed following an agreement between Grace,

SINCE 1889
FOIL
FOIL
FOIL
FOIL
FOIL
...FOR EVERY PURPOSE
• In Any Desired Gauge
• In 24 Beautiful Colors or Plain
• Plain or Embossed
...by The Oldest Rollers of Foil in America!
SINCE 1889
JOHNSTON FOIL MANUFACTURING COMPANY
6008-6298 S. BROADWAY • ST. LOUIS 11, MISSOURI
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SEND FOR SAMPLES
or WRITE US DIRECT:
SALES OFFICES
34 EXCHANGE PLACE, JERSEY CITY, N. J. TEL: DELAWARE 3-2866
DIRECT NEW YORK LINE TEL: WORTH 4-6225
508 S. DEARBORN, ROOM 2930, CHICAGO, ILLINOIS TEL: WABASH 2-2876
633 S. LA BREA, LOS ANGELES, CALIFORNIA TEL: WEBSTER 9-2562
7305 VINE STREET, CINCINNATI, OHIO TEL: POPLAR 1-1303
E905 LAKE AVENUE, CLEVELAND, OHIO TEL: ATLANTIC 1-2900
633 VIRGINIA AVENUE, ERIE, PENNSYLVANIA TEL: 4-6755

which holds a majority of the stock, and Pechiney, a French chemical and metallurgical concern which owns the remaining stock. International Metalloids will produce high-purity elemental silicon. W. R. Grace & Co., New York, parent company of Grace Internacional, has appointed **Marlin G. Geiger** as president and chairman of the new firm.

Lockhart

J. Bicknell Lockhart has been elected a vice president of Riegel Paper Corp., New York. He will continue as manager of merchant and industrial sales. **Frederick M. Jennings** has been elected secretary of the company. **E. V. Hogan** has been elected a director.

To facilitate expanding production at its St. Charles, Ill., Closure & Plastics Div. plant, **Owens-Illinois Glass Co.**, Toledo, Ohio, is constructing a 60,000-sq.-ft. warehouse annex.

Howard T. Brown, chairman of the board, and **John W. Cox**, executive vice president, have retired from **Federal Paper Board Co.**, Bogota, N.J. Mr. Brown, who has been with the company 41 years, will continue as a director.

Albert J. Thiel has been elected president of **Ludlow Papers, Inc.**, Needham Heights, Mass. He succeeds **Henry M. Bliss**, who becomes board chairman.

L. J. Francisco has been named assistant general manager, Plastics & Resins Div., **American Cyanamid Corp.**, New York. **J. A. Healy** succeeds him as vice president for sales and advertising of **Formica Corp.**, a Cyanamid subsidiary.

Lloyd L. Fisher has been appointed manager for bakery products in the Western-Waxide Div. of **Crown Zellerbach Corp.**, San Francisco. He will headquarter in San Leandro, Calif. **A. P. Laissue** has been named special-products sales manager for Western-Waxide's Eastern Div., with headquarters in New York City. **Bruce Dobbs** is now district sales manager for distributor sales in Portland, Ore.

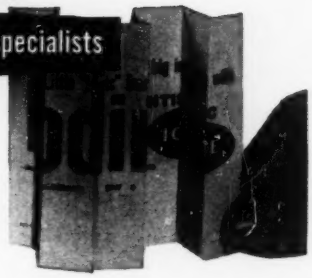
Fisher

An Inta-Roto laminator has been installed at Western-Waxide's San Leandro plant to facilitate production of high-precision laminated and coated flexible-packaging materials.

Sinclair & Valentine Co., New York, has closed its Detroit, Mich., plant. According to the company, S&V's expansion of its Kalamazoo, Mich., facilities

Using package inserts?

Call on Carey—the package insert specialists



Carey Press has the specialized know-how and the specialized equipment to handle every type of package insert job. Result: Carey customers get quick delivery of high quality work at low prices. Find out how 1/16" saved more than $4,000 with Carey-Purchasing Agent consultation.

round-the-clock operation
1, 2, 3, and 4 color printing presses
large and small runs
inventory roll stock with sheeting equipment
printing for special chemical tolerances

See for yourself. Get in touch with Arthur Friedman, Printing Engineer and Sales Mgr., and find out why so many leading companies "call on Carey" for their package insert jobs.

63 years of achievement

CAREY TRIAL RUN SERVICE eliminates tie ups in your packaging production line.

Carey Press will supply you with a quantity of blank stock, cut and folded to the exact size of your package inserts, for testing on your automatic inserters and other packaging production equipment. That way you're *sure* you can handle the job *before* you give Carey the go ahead.

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NEW! **KENSOL 15**
ROLL LEAF STAMPING PRESSES
WITH A 2x4 INCH IMPRESSION AREA

HAND-OPERATED • AIR-OPERATED

The completely new Kensol 15 series of hand and air operated hot stamping presses are small, inexpensive, ruggedly built machines capable of marking both flat and high items.

The air-operated Kensol 15T, weighing 146 pounds, has all the quality features found on the popular larger Kensol presses, namely: adjustable thermostatic heat control, adjustable electric dwell-timer, complete air controlling unit, etc.

The 15T is supplied with 2 hand safety switches, single hand switch or foot control.

KENSOL 15T
Air-Operated Power Press

Write for complete literature!

Complete information on these machines and larger Kensol equipment, together with a useful hot stamped sample, will be sent on request.

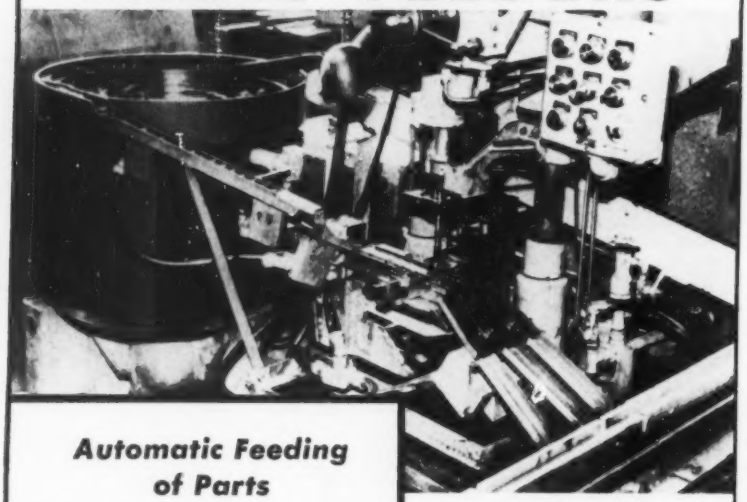
OLSENMARK Corporation
124-132 WHITE ST., NEW YORK 13, N. Y.

Specialists in Quality Marking Equipment and Supplies for over 30 years

SYNTRON

Vertical-Vibratory

PARTS FEEDERS



Automatic Feeding of Parts

to marking, assembly, packaging, grinding and other equipment.

at rates up to 7500 parts per hour.

SYNTRON Parts Feeders will increase the economy, speed and accuracy of any production operation requiring continuous, single line feeding of small parts. They provide automatic, oriented position, single line feeding of parts at controlled rates to automatic machines.

Fast, accurate and require little maintenance. MW 358

Other SYNTRON Equipment

designed to increase production, cut production costs, improve products

Vibrators (bins, hoppers, chutes)
Vibratory Feeders
Vibratory Screens
Shaker Conveyors
Vibratory Elevator Feeders
Weigh Feeders
Packers and Jolters
Hopper Feeders
Lapping Machines

Rectifiers (Silicon and Selenium)
a-c to d-c Selenium Rectifier Units
Electric Heating Panels
Electric Heating Elements
Sinuated Wires
Shaft Seals
Electric Hammers
Concrete Vibrators
Paper Joggers

Our representatives will be glad to work with you in selecting the proper equipment for your operation.

Call your nearest Syntron representative.

SYNTRON COMPANY

250 Lexington Avenue — Homer City, Penna.

Plants and people

will replace production formerly handled in Detroit. **Frank Cumberland** will continue to represent S&V in that area. The company recently opened a new ink-making plant in Seattle, Wash.

Southern Gravure Service, Inc., Louisville, Ky., has opened a new plant at 1022 N. Sixth St., St. Louis, Mo.

Eric N. Blackstead has been elected vice president of **Sun Chemical Corp.**, Long Island City, N. Y. He also becomes general manager of the company's chemicals group.

George Grey has retired as managing director of **Adhesive Tapes, Ltd.**, Borehamwood, Hertfordshire, England.

Lough

William Lough has been appointed Western sales manager for **East Texas Pulp & Paper Co.**, Silsbee, Tex. He will locate in Chicago, where he will be assisted by **Paul K. Brownell. Robert Long** has succeeded Mr. Lough as Eastern representative in the New York office.

A. G. McAdams has been named assistant sales manager of **Resina Automatic Machinery Co., Inc.**, Brooklyn.

Thomas J. Fleischman has been named manager in charge of sales and production for the Western district of the Multiwall Packaging Div., **St. Regis Paper Co.**, New York, succeeding the late **Robin G. Swain. Warren M. Gannon** has been appointed division sales manager in the same district, with headquarters in Los Angeles.

Murray Spitzer has joined the executive staff of the marketing and merchandising division of **Helena Rubinstein, Inc.**, New York.

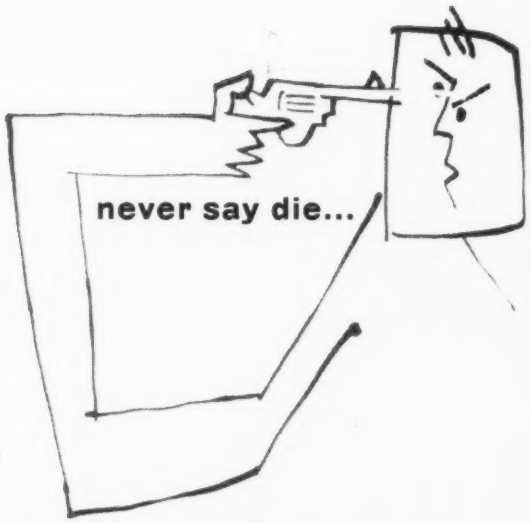
Giddings

Knox Glass, Inc., Knox, Pa., recently signed a 15-year lease for new facilities to house much of the company's mold-making equipment. **Paul Murdock, Jr.**, will manage the new plant, located between Oil City and Franklin, Pa. **James Giddings** becomes Southern sales manager.

A. C. Dreshfield, Jr., and **W. A. Sandholtz** have been named group leaders for its scientific research in the manufacture of all types of cartons and shipping containers by **Fibreboard Paper Products Corp.**, San Francisco.

J. W. LaRocque has joined **Inland Steel Container Co.**, a division of **Inland Steel Co.**, Chicago, as manager of

[*Continued on page 168*]



let Gibbs call the shots

Packaging bottlenecks got you blowing your brains out? Then, maybe you haven't heard of the new Gibbs fully-automatic injection molding plant. Turns out quality rigid plastic boxes at lightning speeds . . . for on-the-dot deliveries. And, these better-made, better-looking containers cut shipping, warehousing costs, are a cinch to fill. Aim your selling sights high! Call Gibbs, the rigid plastic box pioneer.

Automation makes Gibbs rigid plastic packaging cost less

GIBBS *Automatic Moulding Corporation*
Henderson 3, Ky. • Valley 6-9573

If it's strength you need, Findley Adhesives made with new high-speed resins fill the bill. Bonds stronger than the materials being bonded. Strength to guard your package or product . . . to keep your identity secure — your product safe — your package attractive.

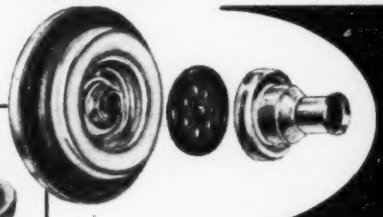
On what materials? Paper, board, transparent films; special treatments; glass, metal; mylar, polyethylene, polystyrene — you name them! Let our specialists show you how to . . .

put STRENGTH in your adhesive bonds with

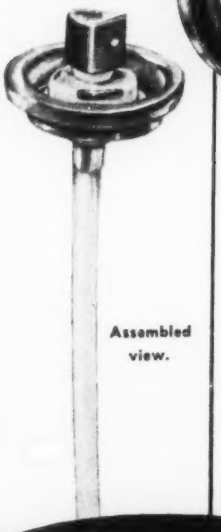
Findley's INDUSTRIAL ADHESIVES exclusively

Dept. MP-45, Milwaukee 45, Wisconsin

Exploded view of OEL Aerosol Valve.



Positive operation ... no clogging with the OEL AEROSOL VALVE



Assembled view.

OEL THE BETTER AEROSOL VALVE

Simplicity is the keynote of the OEL Aerosol Valve. It has only three parts (see exploded view)—the nearest approach to integral construction of any aerosol valve. The unique rubber diaphragm insures accurate sealing, freedom from clogging, and positive action.

The OEL Valve is used on many well known spray and foam products. Interchangeable touch top fitments, easily assembled to the 1" cup, control flow rates and patterns. The same valve is used for both pressure and cold filling with proven results in uniform spray rates and patterns. Advantages are:

1. **Faster filling in pressure loading.**
2. **Minimum propellent loss.**
3. **Uniform flow rates due to "above-the-valve" control.**
4. **Safer with inflammable materials.**
5. **Simplified inventory control due to universal valve.**
6. **Mechanical break-up dispensing at no premium.**

The OEL Valve is now adaptable for products pressurized with nitrogen.

Send for information and samples to enable you to evaluate the OEL Valve on your products. Specify container size and dispensing fitments desired.

We are also manufacturers of precision equipment for pressure filling of aerosol containers.

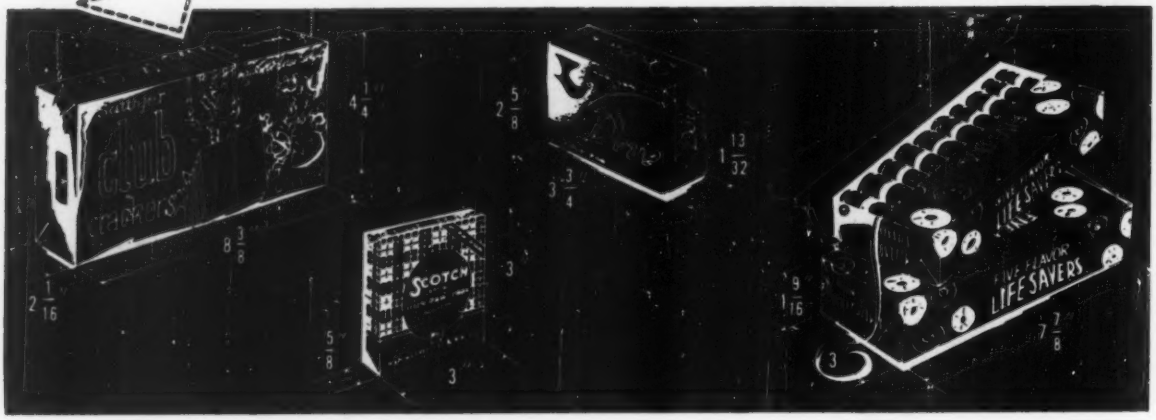
OIL EQUIPMENT LABORATORIES, INC. 600 PEARL STREET ELIZABETH, NEW JERSEY

This Battle Creek Packaging Machine Model 51

has handled overwraps within these ranges at speeds up to 180 packages per minute

See us at booth No. 406

MARCH 25-29, 1956



to produce finished packages like these

Glossy Green Foil Sawyer Cracker Box Gets Instant Consumer Response

Dove Soap Attractively Packaged by the *"Continuous Flow"* Process

One of the Many Sizes of Scotch Tape Packaged to Stimulate Eye and Buy Appeal with Easy Opening Tear Tape

Easy-to-Handle . . . Easy-to-Store Easy-to-Sell Lifesavers Neatly Wrapped with Convenient Tear Tape for Easy Opening

Where your previous processing equipment produces at a high rate, you need a packaging machine that will equal or better that rate. Failure to do so results in expensive bottlenecks. Battle Creek's Model 51 produces steadily at the amazing rate of 80 to 180 tight, uniform packages per minute producing at a lower cost per package while protecting the quality of the product through a faster processing operation. The *"Continuous Flow"* procedure offers a labor saving advantage in that it can be timed to match previous operations without an operator. The Model 51 is available with a variety of merchandising and production devices and handles standard size ranges of 3¼" to 5½" lengths (also 6" to 8" special), widths of 2½" to 4½" and heights from ¾" to 2". It wraps beautifully in heat-sealing cellophane, laminated papers, wax-coated papers or heat-sealing foil and offers a choice of end folds. Ideal for long production runs of retail size frozen food packages. Average conversion time is 15 to 20 minutes.

Call on Battle Creek Packaging Machines today for quick, complete service on your packaging problems.

"Continuous Flow" Packaging

BATTLE CREEK
packaging machines, inc.
102 TWELFTH STREET, BATTLE CREEK, MICHIGAN

Now you see it...

now you don't!

Mono-Sol's **new 100% water-soluble** Packaging Film

Your product takes on unusual customer appeal, provides absolute quantity control and comes to the user in the simplest dispenser possible . . . when you bag or wrap with Mono-Sol internally plasticized Polyvinyl Alcohol Film.

Just drop a package into hot or cool water and stir—quickly, *completely* it dissolves, releasing its contents into the solution. Exceedingly strong, Mono-Sol PVA Film is oil, aromatic and petroleum solvent resistant, impermeable to *oxygen* and many other gases. It's stable, too—won't melt in high humidities, won't crack in low humidities.

Heat-sealable, Mono-Sol PVA Film can be used on most standard package filling and sealing machines with little modification.

For full details send us the coupon clipped to your letterhead. Sample bags and technical data will be promptly sent to you.

Here Are Only a Few of the Many Items That Can Be Packaged Perfectly in Mono-Sol PVA Film:

- Soaps
- Insecticides
- Sodium Bicarbonate
- Medicinals
- Sodium Hyposulphite
- Detergents
- Naphthalene
- Dyes
- Trisodium Phosphate
- Oils
- Greases

MONO-SOL CORPORATION
407 COUNTY LINE ROAD / **GARY, INDIANA**

MONO-SOL CORPORATION
407 County Line Rd., Gary, Indiana

Please send us bag samples and full technical data.
We are interested in Mono-Sol PVA Film for packaging _____

Name _____ Position _____

Company _____

Address _____

City _____ Zone ____ State _____

CATCH THEIR EYE

with colorfully PRINTED PATAPAR® WRAPPERS

Wet-strength, grease-resisting wrappers of Patapar Vegetable Parchment do more than just protect the product. They add glamour and sales appeal!

Exquisitely printed in eye-compelling colors, Patapar is outstanding for packaging butter, ham, bacon, cheese, margarine, shortening, poultry, sausage, nursery stock, flowers and many other products.

Our plants are completely equipped for printing Patapar in full color—by letterpress or lithography. Inks used are color-fast and NON-TOXIC.

We will reproduce your present wrapper design, or we'll create a colorful new design for you with any wording you wish. No charge for typesetting.

Want us to show you? Just tell your requirements and send us a sample of your present wrapper.

Patapar®
Vegetable Parchment
HI-WET-STRENGTH · GREASE-RESISTING

HEADQUARTERS FOR VEGETABLE PARCHMENT SINCE 1885

Plants and people

[Continued from page 164]

national sales. He will locate at the company office in New York.

To accommodate increased business in New England, **Permacel-LePage's, Inc.**, New Brunswick, N.J., has opened a new warehouse at the LePage's plant in Gloucester, Mass. The company's full line of products will be available from the warehouse, which becomes its 10th such regional outlet in various parts of the country.

Davis

Druding

Dr. Lyle L. Davis has been appointed food technologist for the Eastern Div. of **Stone Container Corp.**, Chicago. **Ted J. Druding** has been named to the new post of sales-promotion manager for the company's Eastern Div.

Western Paper Box Co. of Detroit, formerly operated as a subsidiary, has been made a division of Stone Container.

Penn-Mar Container Corp., Philadelphia, Pa., has purchased **Fibreboard Products (Eastern Div.), Inc.** No personnel or operational changes are contemplated.

Kenneth W. Glazebrook has been appointed manager of the Philadelphia, Pa., sales office by **West Virginia Pulp & Paper Co.**, New York. The new office will serve Westvaco accounts in eastern Pennsylvania, southern New Jersey, Maryland and Delaware.

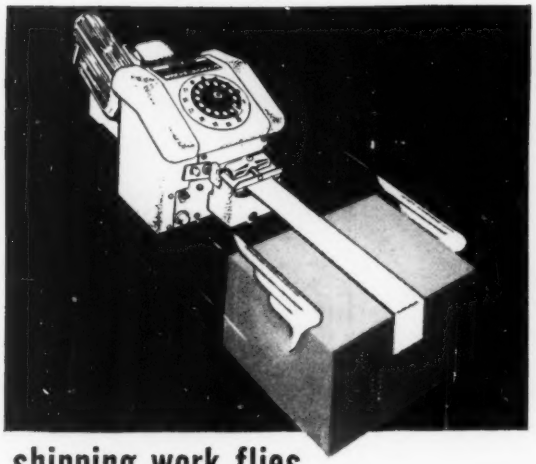
Walsh

Ed E. Walsh has been appointed sales manager of **Custom-Pak, Inc.**, Cincinnati, Ohio. Mr. Walsh, who will handle national and overseas sales, was formerly with Kraft Food Corp. and also operated his own food-brokerage firm. Custom-Pak makes unit-serving food packs.

H. S. Crocker Co., Inc., San Bruno, Calif., is installing $500,000 worth of new printing equipment at its San Bruno and Baltimore, Md., plants as part of an over-all production-expansion program.

Crystal Tissue Co., Middletown, Ohio, recently installed a Black-Clawson TD-12 slitter-rewinder to supplement the facilities afforded by Crystal's new No. 5 Yankee tissue machine.

Initial shipments of laminated-foil materials have been made from the new



shipping work flies

with a MARSH Electric DIAL-TAPER

Dial desired length—out comes moistened, ready-to-use tape for any size carton. Electrically-heated water softens tape glue for complaint-proof seal. You save up to 20% in time and tape. Write for free booklet T-18.

MARSH *Electric* ***Dial-Taper***

Marsh Stencil Machine Company
71 Marsh Bldg.
Belleville, Illinois

T-26

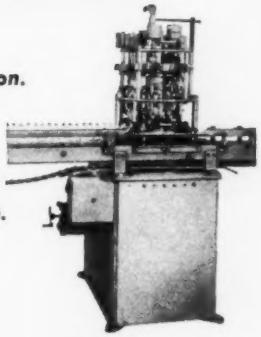
The Patronage of Well Known Names Is Significant

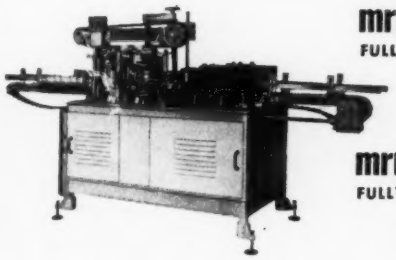
The American Distilling Company is now applying seals automatically with the Gisholt Sealamatic. If you use cellulose neck band seals, and your lines run 80 or more BPM, then get the facts on this fine machine. Write...

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

the mrm method for profit-happy packaging

(1) Trouble-free automation.
(2) Precision efficiency— no rejections.
(3) Jet-speed changeover.
(4) Minimum maintenance.





mrm FULLY AUTOMATIC **FILLERS**

mrm FULLY AUTOMATIC **LABELERS**

OVERHEAD DRIVE—Vacuum, gravity and volumetric type ROTARY FILLERS.

Models from 8 to 40 spouts handling all types of foamy and still liquids such as brines, vinegars, chemicals, drugs, perfumes, syrups, cosmetics, shampoos, detergents, wines, liquors and food products.

CONTINUOUS MOTION — fully automatic Model CM LABELING MACHINE

Handles all sizes and shapes of labels and containers from fractional ounces to gallons. Applies a complete wrap-around label on square, round, oval or rectangular containers or a panel label on flat, curved or recessed surfaces. Production capacities from 40 to 150 per minute.

Write Dept. MP-2 for complete literature.

mrm COMPANY, INC.

191 Berry Street, Brooklyn 11, N. Y.

Manufacturers of a complete line of fully automatic and semi-automatic liquid filling and labeling equipment.

"MAYPO"
Now Packages the
SEAL-SPOUT way

For EASIER OPENING
EASIER POURING
EASIER STORING

It's another famous cereal that recognizes the established consumer acceptance and preference for pouring spouts — SEAL SPOUTS.

They are the aluminum pouring spouts that are automatically applied right in your production line. If you package free-flowing products, Seal-Spouts will help you sell them.

SEAL SPOUT Corp.

MOUNTAINSIDE, NEW JERSEY

Plants and people

Belpre, Ohio, foil-processing plant of **Kaiser Aluminum & Chemical Corp.**, Oakland, Calif.

Phillips

Dean K. Phillips has been named manager of public relations of **Diamond Gardner Corp.**, New York. Mr. Phillips, who was director of public relations for The Gardner Div., joined the former Gardner Board & Carton Co. in 1950 as assistant director of public relations.

Richard J. Wiechmann has been named advertising manager of **International Paper Co.**, New York. He succeeds **Willard Von Hagen**, retired.

Dr. C. E. Frick has been promoted to the new post of manager of technical services at the **Dutch Brand Div.** of **Johns-Manville Corp.**, Chicago.

Henderson

Bob J. Henderson has joined **Dixie Wax Paper Co.**, Dallas, Tex., as quality-control engineer. Mr Henderson, who was formerly with Beyner Bag Co., comes to Dixie from the Shellmar-Betner Div. of Continental Can, where he supervised quality control in field service.

Gisholt Machine Co., Madison, Wis., has appointed **F.M.C. International** as exclusive export sales agent for its line of packaging machines. F.M.C. International is a division of **Food Machinery & Chemical Corp.**, San Jose, Calif.

The Crossett Co., Crossett, Ark., has initiated a **$200,000** building program which is designed to expand its research laboratory.

Miehle-Goss-Dexter, Inc., Chicago, recently held open house at its new office in Dallas, Tex., in conjunction with the company's exhibit of printing machinery and equipment.

William M. Bullock has been named general-line industrial sales manager for **Permacel-LePage's, Inc.**, New Brunswick, N. J.

Mid-West Wax Paper Co., Fort Madison, Iowa, has completed an annex to its plant, increasing shipping and storage facilities.

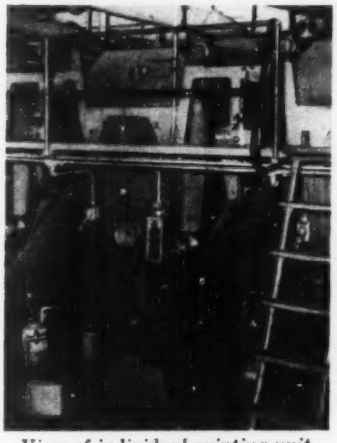
Mitchell-Hopper Associates, industrial design firm, has moved to 468 Jackson Sq., San Francisco.

Charles O. Bailar, manager of service operations for **Marathon Service Co.**, Menasha, Wis., a **Marathon Corp.** sub-

Another leader

chooses

CERUTTI ROTOGRAVURE



View of individual printing unit from doctor blade side

Central Waxed Paper Company, Chicago, installs "Model America" CERUTTI Press

Today's large-volume producer of food wraps demands critically sharp impressions and high-speed production . . . that's why CERUTTI was first choice with Central Waxed Paper. As a leading converter of flexible packaging for the food industry, Central Waxed Paper compared press for press—checked operational efficiency, rigidity, versatility, ease of adjustment—then picked CERUTTI "Model America" to use for high-quality printing on paper, foil and cellophane. Central Waxed Paper's 8-color 48" CERUTTI press is equipped with single roll unwind, duplex rewind, two flexographic conversion units, motor-controlled length and side register . . . together with many other advanced design features which have made CERUTTI the standard of excellence among quality-conscious buyers of rotogravure presses.

See for yourself why the CERUTTI rotogravure press has become the *new choice of the leaders* for every package, publication and specialty printing need. If you are in the market for a new press let Parsons & Whittemore show you how one of the 5 CERUTTI models can more than fill the bill.

PARSONS & WHITTEMORE *Graphic Corporation*

A wholly-owned subsidiary of Parsons & Whittemore Inc.

250 PARK AVENUE • NEW YORK 17, N.Y.

In Canada: Manton Bros. Ltd., Toronto

Don't buy or sell boxes, cartons or any shipping containers unless they are tested for strength by a TMI package tester.

This will avoid any loss of your time or money and will assure you that your product arrives in perfect condition.

TMI, well known for testing instruments, carries a complete line of testers such as: Compression, Vibration, Revolving Drum, Conbur, Puncture, Drop and all other testers for component parts. These instruments are reasonably priced, highly accurate, easy to operate and cost little to maintain. *All technical specifications are met.*

Write today for our PACKAGE TESTING Catalog and find out how your package can be made to "take it."

tmi TESTING MACHINES INC.

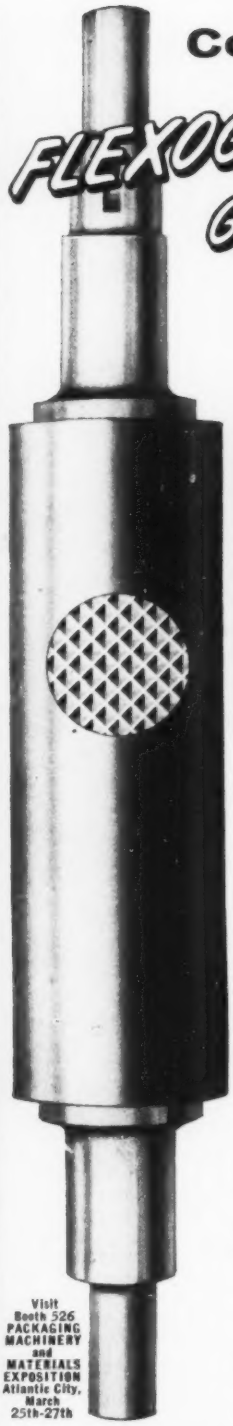
123 West 64th Street, New York 23, New York

Manufacturers and Distributors for over 30 years

Converters-

FLEXOGRAPHIC! GRAVURE!

PAMARCO
RE-ENGRAVING
SERVICE



Visit Booth 526 PACKAGING MACHINERY and MATERIALS EXPOSITION Atlantic City, March 25th-27th

Fast Service on Flexographic Ink Rolls and Gravure Applicator Rolls

PAMARCO's skilled technicians, with modern equipment, rework your rolls to the highest standards of the engraving trade. Constant research and close cooperation with the flexo and gravure trades have enabled us to establish today's criterion of long roll life and uniformity. Careful attention to detail and years of experience as the leading supplier to press manufacturers and converters are assurance of satisfaction.

Complete Roll Service . . All Work Performed in the Modern PAMARCO Plants

- Full range of patterns in stock
- Engineering Department and Laboratory at your disposal
- Preventive maintenance service
- Copper and Chrome Plating
- All types of rolls manufactured

Paper Machinery and Research · Inc

1014 OAK STREET,
ROSELLE, NEW JERSEY

WRITE FOR INFORMATION ON NEW MICRO-LOK DEMOUNTABLE PLATE CYLINDERS

Plants and people

sidiary, has retired after 32 years of service with the company.

John Hillis has joined the sales staff of **Bensing Bros. & Deeney**, Philadelphia, Pa.

Turner

Arthur N. Turner, Jr., has been appointed Baltimore district sales manager for **Hinde & Dauch**, Sandusky, Ohio, a division of **West Virginia Pulp & Paper Co.** He succeeds **Philip S. Fuld**, now a package engineer in the Baltimore area. Mr. Turner was formerly in charge of the Lenoir, N. C., sales office.

National Can Corp., Chicago, has appointed **Lawrence L. Grunn** as manager of its Cleveland, Ohio, plant.

Herbert M. Rome has been promoted to sales manager for **Olympic Plastics Co., Inc.**, Los Angeles.

White

Sam White has been appointed advertising manager of **Soabar Co.**, Philadelphia, Pa. Mr. White, who was formerly assistant sales manager, has been with Soabar for the last 10 years. The company manufactures a complete line of ticket- and label-marking equipment.

Russell Mandeville has joined the New York City sales staff of **Kidder Press Co.**, Dover, N. H.

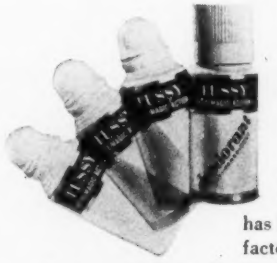
Eric Teran has been named executive vice president and **Gerald Frisch** has been elected vice president for plans and marketing of **Jim Nash Associates**, New York.

Commander Richard K. West, president of **West Instrument Corp.**, Chicago, died in an airplane crash early in December. He was also chairman of **West Instrument, Ltd.**, of England.

Lee Turner, Eastern regional sales manager of the **Bagpak Div. of International Paper Co.**, New York, died on Dec. 24. Mr. Turner, who was 63, had been associated with the company for 23 years.

F. D. Palmer, a pioneer in the design and manufacture of carton-forming equipment, died on Jan. 6 at his home in Winter Haven, Fla. Mr. Palmer was founder and head of **F. D. Palmer, Inc.**, Chicago, which was purchased in 1948 by **Package Machinery Co.**, East Longmeadow, Mass.

Bracon . . . SQUEEZE-TO-USE PACKAGING



Delightfully different . . .

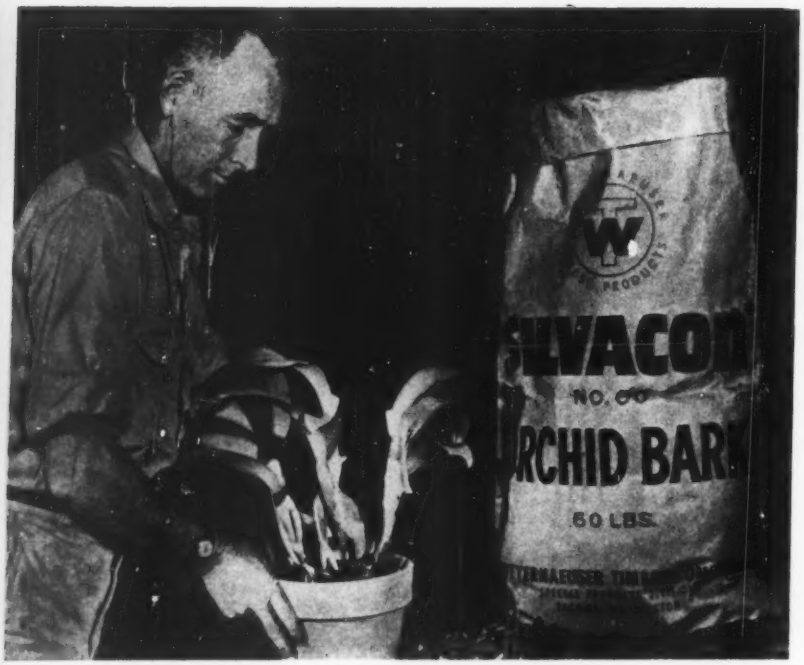
To merchandisers of deodorants the package has become as important as the contents . . . a vital factor for future sales.

To expand its position in the market, Lehn & Fink Products Corporation asked us to develop an entirely new container . . . one that contained a roll-on application with the pliability of polyethylene. Here's the result: BRACON squeeze bottles for both "ETIQUET" and "TUSSY" deodorants.

These packages have been an *overnight success*! Consumers like their lightness, non-breakability . . . controlled dispensing. Add low cost and appealing printing and you top off an exceptional packaging venture.

Investigate what functional packaging can do for your product. Get full details on BRACON squeeze-to-use tubes, bottles and cans from your Bradley representative . . . located in most major cities.

BRADLEY CONTAINER CORPORATION
A SUBSIDIARY OF AMERICAN CAN COMPANY
Maynard, Mass. — *New York, Chicago, Los Angeles, Toronto*

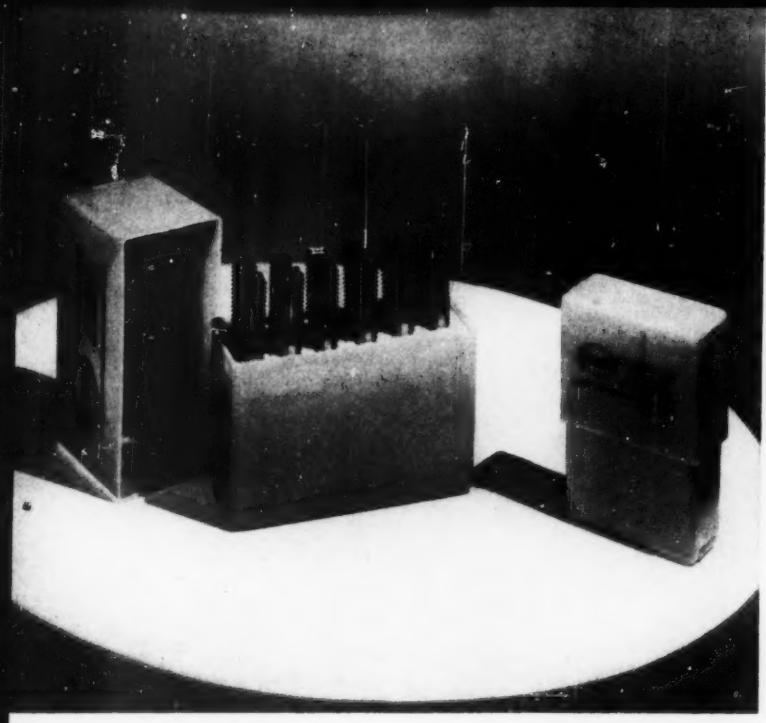


1 EXTRA PROTECTION with a **coating of polyethylene.** Orchids thrive in a special potting soil of Douglas Fir bark. Suppliers now ship this bark in multiwall bags coated inside with a thin layer of BAKELITE Brand Polyethylene. They have found that this low-cost container virtually eliminates shipping problems caused by leakage and dehydration. Toughness is an added feature of this package since the polyethylene coating adds strength to the paper. These extras assure customer satisfaction. That's why polyethylene coatings on paper, film and foil offer positive value in solving your packaging problem.

Three types of packaging with BAKELITE Brand Plastics

ADD THE

3 EXTRA CONVENIENCE with **polyethylene film.** Film bags made from BAKELITE Brand Polyethylene are being used to ship fresh cream, with notable economies for farmers and dairymen. The bags, in addition to reducing weight, afford up to three times more shipping space per load in pickup trucks. Filled and packed four to a cardboard carton, they provide a better insulated package that helps keep cream cool in summer and prevents freezing in winter.



2 EXTRA UTILITY with a polyethylene box. This telescoping box does extra duty as a useful premium. It's molded of BAKELITE Brand Polyethylene, stamped with the company name, and available in several colors. Initially, this is the package for fine, delicate cutting tools—taps, carbides and gages—"industrial jewelry." Tough but soft, the polyethylene protects their sharp cutting edges; its different colors help to identify different contents. These boxes may be saved and used for a variety of small personal items. Customers keep you in mind when you offer your product in a valuable re-use container which carries your brand name.

BIG EXTRAS

Beat the profit squeeze with creative packaging.

Take advantage of the variety of BAKELITE plastics

and our long experience in packaging with plastics.

Ask your packaging supplier, or write Dept. BJ-105.

It pays to package in BAKELITE BRAND PLASTICS

UNION CARBIDE

BAKELITE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.

The terms BAKELITE and UNION CARBIDE are registered trade-marks of UCC.

For your information

The **Waxed Paper Merchandising Council** has appointed a nine-man Steering Committee, replacing its Operating and Advertising committees. Members are: **Donald Brownell**, Kalamazoo Vegetable Parchment Co.; **Carl S. Carlson**, Nashua Corp.; **Jack H. Conrad**, Pollack Paper Corp.; **Jack Cusack**, Central Waxed Paper Co.; **Stanley G. Ellis**, Marathon Corp.; **Edgar E. Erdman**, Badger Paper Mills, Inc.; **Robert D. Halford**, Fabricon Products; C. W. **Hoffman**, Riegel Paper Corp., and **Joseph C. Tobin**, Western-Waxide Div., Crown Zellerbach.

Robert Vandenberg, research director of Marathon, has been elected chairman of the Joint Technical Committee of WPMC and the Waxed Paper Institute.

Alfred E. Southon, chairman of the board of Kalamazoo Vegetable, has been re-elected to his fifth term as president and board chairman of the Council. **George C. Wieman** of Western-Waxide has been re-elected vice president.

Geiger Seaman

The **Pressure Sensitive Tape Council**, Glenview, Ill., has elected **C. Gregg Geiger**, Dutch Brand Div. of Johns-Manville Sales Corp., as president and **Howard G. Seaman** of Behr-Manning Co. as vice president. **R. G. Breeden** has also been re-elected managing secretary-treasurer of the council.

The Art Directors Club of New York, 115 E. 40 St., New York, has published *The 36th Art Directors Annual* (Farrar, Straus & Cudahy, Inc., 101 Fifth Ave., New York 3; $12.50). This profusely illustrated, 359-page book is divided into six sections: Advertising Art, Editorial Art, Advertising Design, Editorial Design, Television and Annual Report. The covers from the Oct., 1956, issue of MODERN PACKAGING and the *Modern Packaging Encyclopedia Issue for 1957*, both of which won special awards, are reproduced in the Editorial Art section of the volume.

Two graphic-arts symposiums will be conducted during the 43rd annual meeting of the **Technical Assn. of the Pulp & Paper Industry**, to be held Feb. 17-20 at the Commodore Hotel, New York. The first symposium, scheduled for the morning of Feb. 19, is titled, "Basic Factors in Ink-Paper-Press Relationships." The second, to be held that afternoon, is titled, "Evaluation of Printability by Proof Press Techniques."

The deadline for entries in its eighth national competition of set-up box packages is Feb. 15, reports **National Paper Box Manufacturers Assn.** Awards in the competition, which is open to association members only, will be presented May 15 at NPBMA's national convention in Detroit, Mich.

Each entry will be evaluated for merchandising appeal, construction, display value and surface design. Judges include **J. Gordon Lippincott** of Lippincott & Margulies; **Henry J. Aemisegger**, retired box manufacturer, **Charles Feld**, executive director of the Packaging Institute, and **Pearl Hagens**, senior editor of MODERN PACKAGING.

The **Society of Industrial Packaging & Materials Handling Engineers** has moved its national office to Suite 1534, 14 E. Jackson Blvd., Chicago 4.

At its recent 44th annual meeting in Florida, **Chemical Specialties Mfrs. Assn.** elected **James E. Ferris** as president. Mr. Ferris is manager of inorganic chemicals for Hooker Electrochemicals Co., Niagara Falls, N.Y. Other new CSMA officers are: first vice president—**Donald M. King**, Masury-Young Co., Boston, Mass., and second vice president—**George W. Fiero**, Esso Standard Oil Co., New York. The group also named three men to its board of governors.

A special committee has been named by the board of governors of the group to recommend a course of cooperative action between European trade associations in various fields—particularly aerosols—and CSMA. The committee has appointed **Frederick G. Lodes** of Lodes Aerosol Consultants, Inc., to go to Europe and observe trade developments as CSMA's representative. He is expected to make his report at the association's next annual meeting. Mr. Lodes, who is a member of the association's board of governors, has made frequent trips to Europe in the interest of the aerosol industry.

The second edition of the *National Directory of Rack Jobbers* contains 840 listings, almost twice as many as were listed in the first edition, published two years ago. An editorial report on rack jobbers, available with the directory, points out that new supermarkets will devote as much as 50% of their selling area to non-foods. The directory, including the 15-page editorial report, can be ordered from Gale Research Co., 1116 Book Tower, Detroit 26, Mich. Price of the new edition is $15.

The **Folding Paper Box Assn. of America**, New York, reports that selection of the 100 best cartons in its 1958 **Folding Carton Competition** will be announced on March 19 at FPBA's annual meeting in New York. A panel of 22 judges will select winning cartons in four classifications from an estimated 9,000 entries.

A program of financial aid to education—including grants to individual institutions and contributions to associations of independent liberal-arts colleges—has been undertaken by **Continental Can Co.**, New York. According to **Gen. Lucius D. Clay**, board chairman, the company contributed about $100,000 in these two forms in 1957, in addition to its disbursements for scholar-ships and individual grants.

So far, 165 exhibitors have registered for the 1958 **National Plastics Exposition**, to be held at the International Amphitheater, Chicago, Nov. 17-21. The **Society of the Plastics Industry, Inc.**, sponsor of the show, reports that more than 200 exhibitors are expected and attendance will exceed 20,000. Concurrent with the exhibition, SPI has scheduled a **National Plastics Conference** at the Hotel Morrison in Chicago.

The major families of plastics produced by **Bakelite Co., Div. Union Carbide Corp.**, New York, are described in the 1958 edition of the "Condensed Refer-

What's doing

Feb. 14-16—**Institute of American Poultry Industries**, annual fact-finding conference, Chicago.

Feb. 17-20—**Technical Assn. of the Pulp & Paper Industry**, 43rd annual meeting, Hotel Commodore, New York.

Feb. 18—**Rochester Society for Quality Control**, 14th annual quality-control clinic, War Memorial, Rochester, N. Y.

March 2-11—**The Leipzig Spring Fair**, Leipzig, Germany.

March 6-7—**The Society of the Plastics Industry (Canada), Inc.**, 16th annual conference, Royal Connaught Hotel, Hamilton, Ont.

March 11-12—**Packaging Assn. of Canada**, national packaging conference, King Edward Hotel, Toronto, Canada.

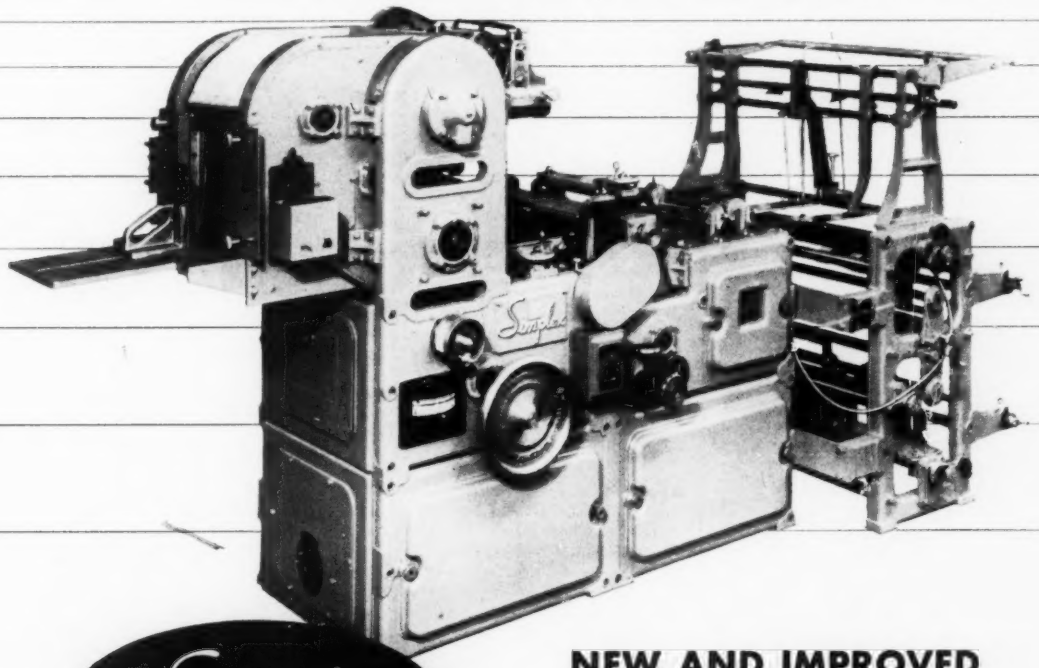
March 19—**Folding Paper Box Assn. of America**, annual meeting, New York.

March 25-28—**The Packaging Machinery & Materials Institute**, exposition, Atlantic City, N. J.

March 26-28—**The Society of the Plastics Industry, Inc.**, 15th annual Pacific Coast section conference, El Mirador Hotel, Palm Springs, Calif.

FOR REAL RUGGED DUTY WITH PRECISION

—on continuous 24 hour a day hi-speed CELLO bag making



Simplex®

NEW AND IMPROVED

300

For producing high quality, low cost Cello bags around the clock, Simplex's rugged, precision-engineered model 300 has no equal. It offers you: Low initial cost; simplified, automatic operation; continuous high speed production; quick change-over for long or short runs, minimum maintenance.

Heat-and-Glue Seal Bags with Non-Blocking Fold-Over Bottom

This reliable high performance machine delivers 175 to 300 strong sift-tight Cello bags per minute—flat or gusset—with single or double wall. Infinite adjustment of bag lengths from 4" to 18", and from 2" to 12" in width. Send for sample bag—see the difference model 300 makes.

It's Great for K-film, too

Putting Ideas to Work

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION ®

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
534-23rd AVENUE, OAKLAND 6, CALIFORNIA
Foreign Sales: FMC Export Dept., P.O. Box 760, San Jose, Calif., U.S.A.
(Cable Address: FOODMACHIN)

COLTON

Booth D
P.M.M.E.
Atlantic City

1. NEW Polyethylene Filler and Sealer
2. NEW Blister-Pak Precision Sealer
3. NEW Multiple Tablet Filler
4. Multiple Bottle Liquid Filler
5. Multiple Tube Paste Filler

ARTHUR COLTON CO.
DETROIT 7, MICH.

For your Information

ence File." The illustrated 12-page booklet has thumb indices locating data on polyethylene, vinyls, phenolics and epoxies. Copies are available from the company at 30 E. 42 St., New York 17.

New officers were elected at the annual meeting of **Metropolitan Assn. of Film Converters**, New York. They are: president—**Samuel J. Rivman** of Wrapture, Inc.; vice president—**Arnold Pollard** of Bagphane Corp.; treasurer—**Mulford Cole** of Mason Envelope Co., and secretary—**John Capolla** of Poly Print Bag Co.

A 32-page handbook designed as a guide to the proper selection and use of collapsible metal tubes is available from **A. H. Wirz, Inc.**, Chester, Pa. The 32-page "Wirz Tube Handbook" includes data on tube design, manufacturing and merchandising, as well as specification factors. Selector charts serve as a guide in determining the compatibility of various products with such tube metals as aluminum, tin, lead and alloys.

The third annual **Industrial Materials Handling and Packaging Conference** has been scheduled for the University of California, Berkeley, Calif., on April 4-5. Co-sponsors are the **Society of Industrial Packaging and Materials Handling Engineers** and the **American Material Handling Society of the San Francisco Bay Area.** There will be two general packaging and materials-handling sessions each day.

Fred M. Gore of Dallas, Tex., has been elected an associate member of the **American Society of Industrial Designers.**

Leo H. Schoenhofen, senior vice president, Container Corp. of America, Chicago, has been elected a director of **National Paperboard Assn.**

Reduction of packaging costs is the subject of a revised Little Packaging Library booklet published by **Hinde & Dauch,** Sandusky, Ohio. The 24-page booklet contains advice on designing, testing and storing product packages, as well as suggestions for more economical packing, sealing, warehousing and shipment of corrugated boxes. Titled, "How to Ship More Economically in Corrugated Boxes," it is available upon request to the company.

A sound-motion picture in color, showing how aerosol packaging is done by both cold and pressure-fill methods, is available on loan from **Mojonnier Associates, Inc.,** Franklin Park, Ill.

The **U.S. Department of Commerce** publishes quarterly a *Containers and Packaging Industry Report.* The report includes statistics and analyses of production, shipments, distribution and inventories; related data for subdivisions of paper, board, tubes, glass and metal containers, and regional reports on trends and conditions. Write to Containers & Packaging Div., Business & Defense Services Administration, U.S. Dept. of Commerce, Washington, D.C.

Western Michigan University, Kalamazoo, Mich., has purchased a laboratory pilot model Fourdrinier from the **Wheeler Roll Co.,** also Kalamazoo. The machine will be installed in the university's department of paper technology.

Stone Paper Container Corp. has prepared a 16-page illustrated booklet titled, "How to Select the Proper Container for Your Product," which discusses basic factors in choosing corrugated shipping boxes. Copies are available from Stone Container Corp., 4200 W. 42 Pl., Chicago 32.

The **Society of Typographic Arts** will sponsor a **Design in Chicago Printing Exhibition** at the Art Institute of Chicago from April 11 to May 18. Chairman of the exhibition is **Hayward Blake,** art director of Ekco-Alcoa Containers, Inc., Wheeling, Ill.

The **National Confectioners' Assn.** has scheduled its annual **Confectionery Industries Exposition** for July 7-10 at the Civic Auditorium, San Francisco, Calif. Information on this year's exposition is available from NCA Exposition Management, Suite 426, 221 N. La Salle St., Chicago 1.

William S. Bucke of Lafayette Pharmacal, Inc., has been elected 1958 president of the **Parenteral Drug Assn. John Henderson** of Chase Equipment Corp. is vice president.

More than 9,000 exhibitors from 40 countries will participate in the **Leipzig Spring Fair,** to be held March 2-11 at Leipzig, Germany. The total exhibition area of 3,135,000 sq. ft. will be divided into 55 trade sections.

Ronald E. Mander, sales manager of TCF of Canada Ltd., has been named chairman of the Montreal Div. of the **Packaging Assn. of Canada.**

More than 60 exhibitors have been signed up for the second annual **Advertising Art, Photography and Modern Reproduction Show,** to be held March 4-6 at New York's Biltmore Hotel. Produced and directed by **Advertising Trades Institute, Inc.,** New York, the show will feature the latest developments in such fields as photo lettering, typography, reproduction services, retouching and engraving.

ROTOGRAVURE PRINTED CELLOPHANE WRAPPERS

family album by Milprint

Illustrating the completeness of service Milprint offers frozen food packers is this "family album" of Fradelis Frozen Food Corp. packages. Milprint not only produces eye-catching outer wraps and cartons but inner pouches as well.

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LITHOGRAPHED DISPLAY CARTONS AND PRINTED FOIL POUCHES

LITHOGRAPHED CARTONS

Milprint* INC.
PACKAGING MATERIALS

U. S. patents digest

This digest includes each month the more important patents of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at 25 cents each in currency, money order or certified check; postage stamps not accepted. Edited by H. A. Levey.

Paperboard Blank and Can Carrier Formed Therefrom, George H. Parker (to Container Corp. of America, Chicago, a corporation of Delaware). U.S. 2,812,105, Nov. 5. A can-carrier blank formed of sheet material such as paperboard, said blank comprising a sheet of substantially elongated rectangular form cut and scored to provide a plurality of hingedly connected rectangular wall panels, each of uniform width and all of the same and uniform length and free of end projections, an attaching panel at one end of said sheet, a partition panel at the other end of said sheet and a tongue portion.

Pouring Container with Protective Cover, Thomas M. Sheets, Newark, Del. U.S. 2,812,121, Nov. 5. A container having bottom and side walls, at least certain portions of said side walls being flexible, and an open top; a cover for said container having a portion extending down over the exterior surface of a major peripheral portion of the lip of said container; at least a lower portion of the downwardly extending part of said cover being cut out to define an opening which is normally closed by a flexible portion of the lip of the container and through which the lip will extend to form an opening and a pouring spout when the container is flexed.

Cap for Collapsible Tube, John N. Magovern, Agawam, Mass. U.S. 2,812,122, Nov. 5. A two-part dispensing device for the upper threaded outlet neck of a collapsible tube, comprising in combination a body having an upper and a lower portion and a closure which is attached to swing into an open or closed position.

Dispensing Cartons, Paul J. Graybill, New Haven, Conn. U.S. 2,812,127, Nov. 5. A container formed from foldable material having a wall comprising inner, intermediate and outer panels in superimposed and at least partially adhered relation, said outer panel to extend somewhat beyond the edge of said container on one corner thereon to form protrusion tabs, said inner panel being cut to form an aperture, said intermediate panel being cut and creased to form the inner panel of a seal flap having articulated thereto a lock tab.

Package-Sealing Machine, Arthur Gilbert Russell, et al. (to W. R. Grace & Co., New York, a corporation of Massachusetts). U.S. 2,812,628, Nov. 12. In a machine of the class described, a pivoted arm adapted to swing a crimping head into and out of engagement with the twisted neck of a container, a cam to drive said head, rotating power means to drive said cam, a single-turn clutch having a projecting stop pin connecting said cam to said power means, a stop arm arranged to intercept the projecting stop pin, externally activated means to withdraw the stop arm from contact with the projecting stop pin, a swinging stop block arranged to intercept said projecting stop pin, a link pivoted to the pivoted arm and to the swinging stop block, the pivot position of the link on the arm being such that the stop block remains in the path of the stop pin of said clutch at all times other than when the crimping head is in its forward position.

Fibreboard Reel-Type Package, William N. Fletcher (to Inland Container Corp., Indianapolis, Ind.). U.S. 2,812,854, Nov 12. A reel-type container of fibreboard for reeling and packaging an elongated flexible material, comprising an annular drum formed from a fibreboard blank having a plurality of facets joined by score lines, means securing the free ends of said blank in its annular drum formation, an individual locking ear portion, a pair of rectangular end heads, each having a slot dimensioned and positioned to receive intermediate locking ears, means securing the said locking ears and means securing said overlapping corner portions to each other to provide thereby a unitary package.

Can Carrier, John C. Brackett (to Waldorf Paper Products Co., Ramsey County, Minn., a corporation of Minnesota). U.S. 2,812,857, Nov. 12. A blank for a can carrier including five panels foldably connected along parallel fold lines, the two end panels of the series being designed to overlap, flaps hingedly connected to each of said end walls, a reinforcing strip and can-retaining flaps hingedly secured to the intermediate portion of said intermediate panel and the intermediate portion of said reinforcing strip, providing flaps of double thickness.

Reinforced Double-Wall Container, Joseph Casalino (to Plastic Molded Arts Corp., Long Island City, N.Y., a corporation of New York). U.S. 2,812,874, Nov. 12. A receptacle comprising an outer and an inner member in nested relation, having each a side wall, a bottom and an open top, the side wall of the inner member being defined by a thickened head band and an annular locking rib spaced therebelow forming a locking groove, an annular flange extending inwardly from the top of the side wall of the outer member, said inner member having the portion thereof below said groove lying within the outer member and said flange being tightly engaged in said groove, said members being formed of a resilient material, and a body of rigidifying material for resisting deformation of the inner member and separation from the flange of the outer member.

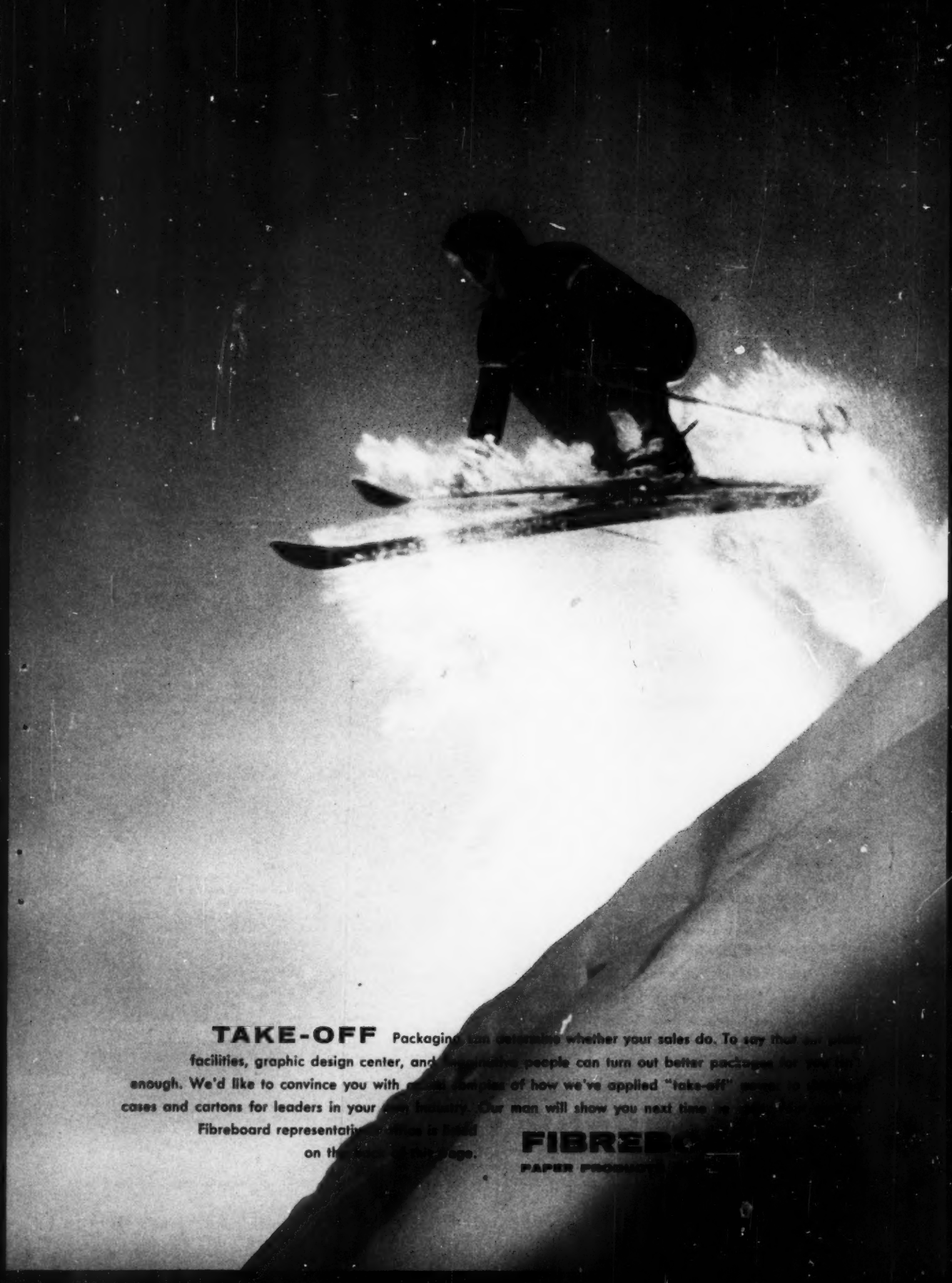
Bottle Carrier, Thomas J. Deeren, et al. (to Owens-Illinois Glass Co., Toledo, Ohio, a corporation of Ohio). U.S. 2,812,878, Nov. 12. A plural-cell carrier of sheet material comprising a rectangular body, panels hinged to the bottom panels and extending upwardly therefrom in juxtaposition and forming a medial partition, said partition being extended to form a handle for the carrier, an upright cross partition intermediate the ends of the carrier, the upper edge of said cross partition being curved and thereby permitting swinging movement of the medial partition relative to the cross partition to and from an upright position, the cross partition having an interlocking connection with the said medial partition.

Reinforced and Partitioned Folding Box, Harry Ginsberg (to Owens-Illinois Glass Co., Toledo, Ohio, a corporation of Ohio). U.S. 2,812,892, Nov. 12. A folding box comprising a bottom wall, side walls foldably connected thereto, end walls foldably connected to each of said side walls, and a partition member foldably connected to one end wall.

Method of Making Paperboard Boxes, Leon E. La Bombard (to The International Paper Box Machine Co., Nashua, N.H., a corporation of New Hampshire). U.S. 2,813,464, Nov. 19. The method of folding a tubular carton from a flat blank of paperboard which consists in initially creasing a flat, unfolded blank with at least one crease line laterally of the blank, a halving crease line longitudinally of the blank and a pair of quartering crease lines longitudinally of the blank to form four articulated side-wall panels.

Receptacle-Making Apparatus, Joseph Mathias Schmied (to Ekco-Alcoa Containers Inc., River Grove, Ill., a corporation of Illinois). U.S. 2,813,465, Nov. 19. An apparatus for folding a substantially flat blank into the form of a receptacle having integrally connected side, end and bottom walls comprising a mandrel having faces corresponding to said walls, an endless carrier, a clamping head, wings hinged to said clamping head and means adjacent the path of the carrier engageable by said wings to move the latter from outspread to folded position during movement of the carrier.

Reclosable Packaging Device, Cornelius Mark Phipps (to Federal Paper Board Co., Inc., Bogota, N.J., a corporation of New York). U.S. 2,813,624, Nov. 19. A reclosable window-type packaging device comprising a forward display panel of generally rectangular outline,



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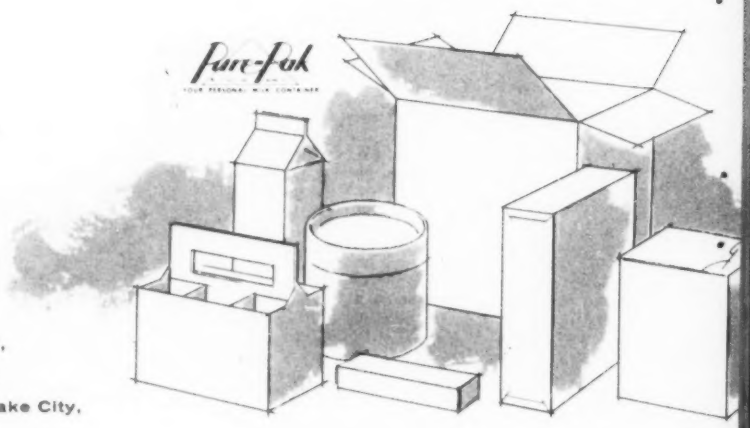


FIBREBOARD
Paper Products Corporation
Head Office—San Francisco

U. S. patents digest

said panel having a window opening in which a transparent protuberant tray-like window member is disposed to extend forwardly of said panel and provide a three-dimensional display chamber.

Hardware Display Card, Rome C. Seyforth (to The Shelby Metal Products Co., Shelby, Ohio, a corporation of Ohio). U.S. 2,813,625, Nov. 19. A hardware package and display comprising a card folded upon itself to provide juxtaposed front and rear flaps; a deformable staple having prongs thereof extending through said flaps and through holes in an article of hardware and a transparent pouch containing screws for the item mounted on said front flap.

Box Segregator, Ernest A. Verrinder, et al. (to Food Machinery & Chemical Corp., San Jose, Calif., a corporation of Delaware). U.S. 2,813,639, Nov. 19. In a box segregator, the combination of means for conveying said boxes in single file and in spaced relation along a given path, a series of limit switches, a series of box-group-identifying pushbutton switches, a bank of actuator relays and a series of banks of lock-in relays.

Bottle Closure, Yonendo Takahashi, et al. (to American Cyanamid Co., New York, a corporation of Maine). U.S. 2,813,650, Nov. 19. A homogeneous plastic closure of stiff resilient resin from the group consisting of polyethylene and polyvinyl chloride for a bottle comprising: a slightly bulged top disk, a hollow inner stem, a bevel at the lower end of said stem, an annular ring surrounding the top disk and inner stem, a dependent exterior skirt, a bead interiorly of said skirt, an exterior bead surrounding and integral with the lower edge of said skirt and reinforcing said skirt, vertical corrugations all the way around the exterior skirt and a lifting tab.

Non-Returnable Carrier, Henry L. Metzger (to Fort Orange Paper Co., Castleton-on-Hudson, N.Y., a corporation of New York). U.S. 2,813,657, Nov. 19. A single die-cut and scored blank of paperboard material to be folded and secured together in collapsed form for use, when opened, as a non-returnable bottle carrier, which comprises a rectangular shaped panel divided into two identical portions along an uninterrupted transverse score line to provide two connected integral longitudinal partitions and carrying-handle sections.

Returnable Bottle Carrier, Henry L. Metzger (to Fort Orange Paper Co., Castleton-on-Hudson, N.Y., a corporation of New York). U.S. 2,813,658, Nov. 19. A single die-cut and scored blank of paperboard material to be folded and secured together in collapsed form for use, when opened, as a returnable bottle carrier, which comprises an elongated panel divided into two portions along a transverse score line to provide two connected longitudinal partitions and carrying handle.

Plastic Nozzle Mounting and Method of Forming Same, William F. Punte (to Continental Can Co., Inc., New York, a corporation of New York). U.S. 2,813,664, Nov. 19. In a container structure, a resilient and deformable plastic nozzle comprising a tubular body and an outwardly extending abutment flange at its lower-end extremity, a sheet-metal container wall with neck having an upper terminal edge indented in and deforming the resilient and deformable nozzle body so as to be sheltered from raw metal-edge exposure thereby and an annular neck bead.

Method of Placing Paper Sheets Between Slices in a Stack, Max E. Toby (to Package Enterprises, Inc., Oakland, Calif., a corporation of California). U.S. 2,813,798, Nov. 19. The method of interleaving paper sheets between adjacent slices of a food product which comprises receiving such slices, feeding a strip of paper toward the slices from a paper supply roll, intermittently pulling on the unrolled end portion of said strip so as to advance the latter toward said slices in timed relation to the reception thereof, transversely cutting said strip and then ejecting said cut sheet along a generally horizontal path to fall upon a just received food slice.

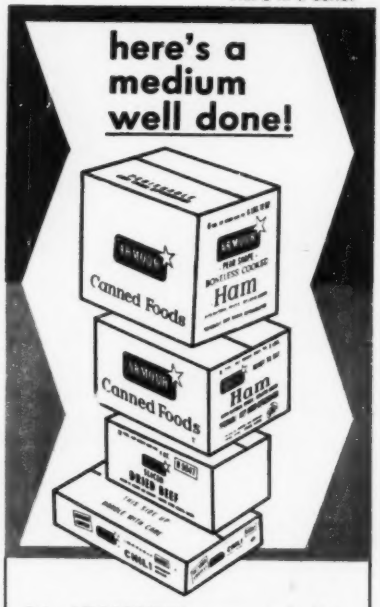
Apparatus for Heat Sealing and Severing Thermoplastic Material, Herbert Rumsey, Jr. (to W. R. Grace & Co., Cambridge, Mass., a corporation of Connecticut). U.S. 24,396, re-issue, Nov. 26. An apparatus for providing and severing thermoplastic sheet material in the wrapping of packages, comprising a supporting structure having a platform thereon, means for rotatably supporting a roll of sheet-wrapping material, an elongated heat severing member and a sheet-retracting and elevating mechanism.

Container for Dressed Poultry and the Like, David Wade Stevick, Southern Pines, N.C. U.S. 2,814,381, Nov. 26. A container for packaging fresh and frozen cut-up poultry, meats, seafoods and the like, comprising a non-insulative substantially rectangular rigid platter having a peripheral flange and groove, medial, longitudinal, transverse and additional transverse drainage grooves and a non-insulative downwardly and outwardly sloping, box-like, transparent cover for said platter.

Cellophane Packaging and Method, Frederick H. Lassiter, Roaring Gap, N.C. U.S. 2,814,382, Nov. 26. A method of packaging cellophane within an optimum atmosphere for preserving the longevity of the cellophane for an indefinite period, comprising placing a predetermined amount of moisture in a permeable container adjacent the cellophane, sealing the cellophane and the permeable container in an air-tight enclosure and rapidly evacuating said air-tight enclosure.

Can Package, Orison W. Stone (to Continental Can Co., Inc., a corporation of New York). U.S. 2,814,385, Nov. 26. A package comprising a plurality of cans in unitary, aligned, side-by-side rela-

No. 2 in a Series



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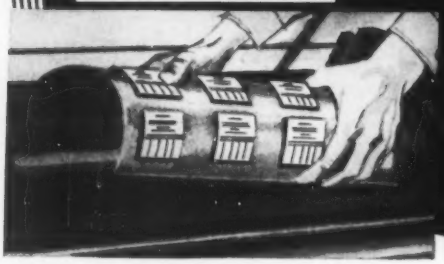

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tionship, each of said cans having a longitudinally extending flange at each end defining a recess, a series of panels arranged to form an open-ended enclosure, a lock tab on one of the opposed panels, said lock tab having a connecting portion of substantial extent hingedly and resiliently connected to a free portion and the panel to which the tab is connected.

Closure for Beaded Containers, Edward J. Towns (to Bryant W. Griffin, Summit, N.J.). U.S. 2,814,404, Nov. 26. A closure of plastic material having the stiffness and resilience characteristics of polyethylene and adapted to be applied to containers having a neck bead comprising a top having a centrally positioned tapered tube, a flared skirt including a plurality of gripping fingers and a securing tab.

Closure Device, Bryant Edwards (to Illinois Tool Works, Chicago, a corporation of Illinois). U.S. 2,814,405, Nov. 26. An elastic plastic closure device for application to an end portion of a container, such as a bottle and the like, comprising a body member having an annular portion of predetermined axial extent adapted to be applied around the upper end portion of the container.

Side Seam for Can Body and Method of Producing Same, Denis J. Campbell, Jr., et al. (to American Can Co., New York, a corporation of New Jersey). U.S. 2,814,416, Nov. 26. A thin-walled tubular-sheet-metal can body terminating at its opposite ends in radially outwardly extending peripheral-end seaming flanges, said body having a longitudinal side seam comprising an intermediate soldered lock section.

Closure Adapter for Containers, Blenn T. Ricke (to Ricke Metal Products Corp., Auburn, Ind.). U.S. 2,814,418, Nov. 26. In combination with an adapter for a dispenser unit having an externally threaded neck: an internally threaded sleeve to engage in said opening, an outwardly directed flange, an externally threaded plug, an outwardly extending flange, an internally threaded recessed portion, the inner end of the plug being closed by a diaphragm integral with said plug and having a weakened line connecting the diaphragm with said plug.

Bag Lifter and Opener, Richard F. Kipers (to The Trescott Co., Inc., Fairport, N.Y., a corporation of New York). U.S. 2,814,488, Nov. 26. A device for picking up a bag off a vertical stack and opening the bag, comprising a vertically disposed cylinder which is closed at both ends, a piston reciprocable in said cylinder, a tubular piston rod, means connected to the upper end of said cylinder for producing suction in said cylinder above said piston and through the bores in said piston and piston rod, said piston rod having a head at lower end formed with a re-entrant opening constituting a mouth for the bore and means on said head for supporting a weight around said piston rod.

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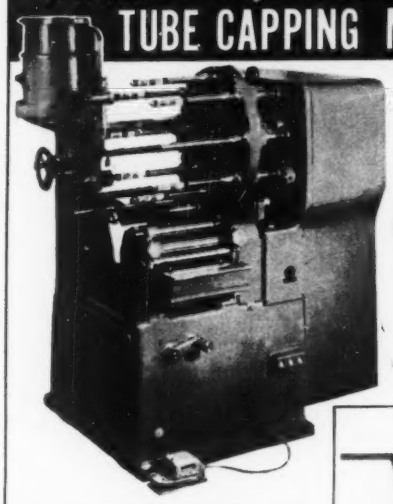
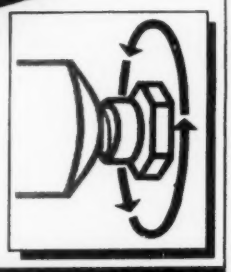
(PATENT APPLIED FOR)



OUTPUT UP TO **3600** SCREWED-ON CAPS PER HOUR



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INDEX INDUSTRIAL CORPORATION

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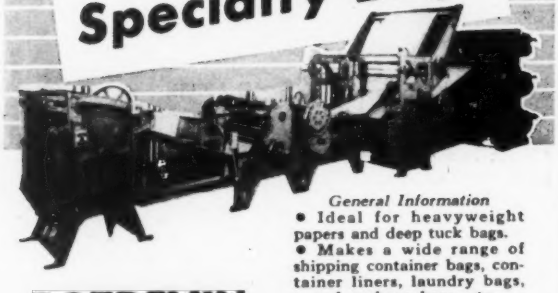

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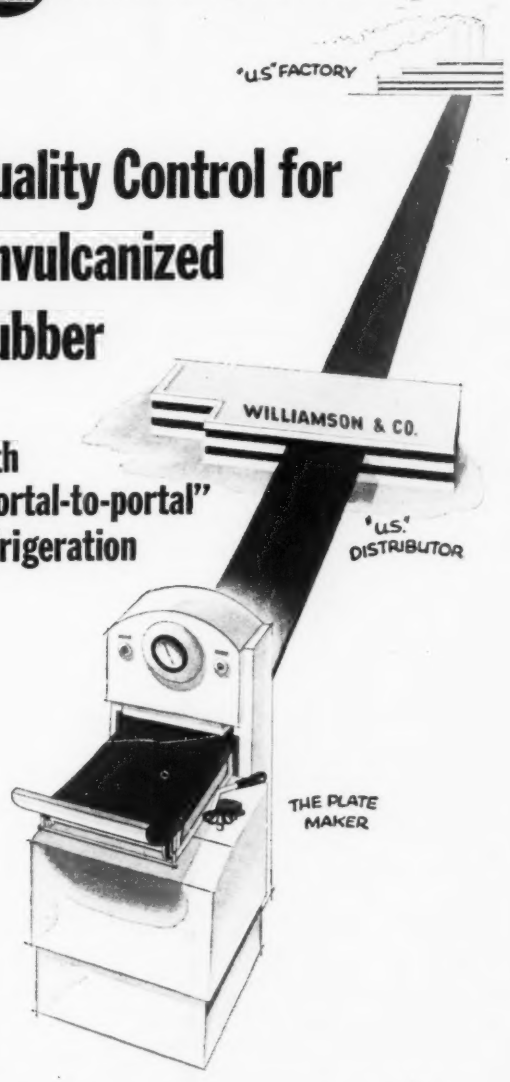

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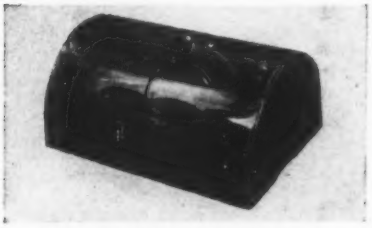
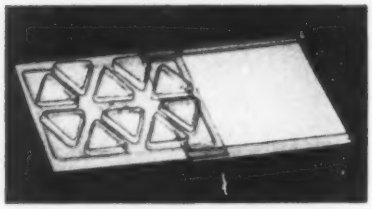
United States Rubber

A striking and attractive blister package adopted by W. R. Sweeney for rubber baby spoons. It displays, protects, adds sales appeal . . . automatic sealing assembly.



A luxurious "quonset" style acetate box designed for Modern Forge Mfg. Co., Inc. added glamour to the merchandise, created new interest skyrocketed sales.



A novel idea in packaging carbide tips introduced by Vascoloy-Ramet Corp. pointed to the versatility of the "slide-pack". Protects individual parts, permits easy identification and selection.

We invite your inquiries on your packaging problems

Plastic Container Division

Plastofilm INC.

916 WEST UNION AVENUE, P. O. BOX 331, WHEATON, ILLINOIS

REPRESENTATIVES IN ALL PRINCIPAL CITIES

SPI Informative Label Contest winners

Grand Prize for the best informative label identifying plastic consumer products during 1957 was awarded last month to the Federal Tool Corp., Chicago, for two product labels: Rainmaster Sprinkling Can and the Silent Minnow Pail. This third annual Informative Labeling Contest was sponsored by The Society of the Plastics Industry in the interest of better consumer understanding of plastics. William T. Cruse, executive vice president of SPI, presented the award at the semi-annual luncheon of the society's Plastics Housewares Mfrs. Div.

The two Federal Tool Corp. labels also won individual category awards —the Rainmaster label in the Hardware classification and the Silent Minnow label in the Sporting Goods group. Awards in four other categories were made as follows: *Building Materials*—Plastics, Inc., Livingston, N. J., label for Alpha PVC Solvent Cement Can; *Home Furnishings*—American Cyanamid Co., Plastics & Resins Div., New York, for its Melmac Dinnerware tie-tag; *Housewares*—The Plas-Tex Corp., Los Angeles, for Plas-Tex wastebasket label and the Plas-Tex ice bucket and wine chiller tie-tag; *Toys*—North Star Industries, Inc., of Hopkins, Minn., for its Bunny Rattle label.

Two plastic-product labels which shared the grand prize in third annual SPI labeling contest.

Among the 17 merchandising authorities and editors who judged the contest was Lloyd Stouffer, editor of MODERN PACKAGING. Chairman of the SPI public relations committee, which was responsible for the contest, is Norman L. Prince of the American Cyanamid Co.

The strategy of point-of-sale display

[*Continued from page 91*]

appears to be more opportunity for the use of motion and light in display, when it can be demonstrated that these adjuncts point up selling features. A good example is a current flasher that dramatizes the use of Sizl-Spray, the new pressure-packed, push-button barbecue sauce.

Packagers are cautioned, however, against blinkers or monotonous motions that merely distract without selling.

The all-purpose program

It is becoming general practice in most firms today to offer a complete reservoir of display materials that may be drawn on as needed to meet the requirements of every type of outlet, whether the retailer can use simple shelf talkers or will go all out for huge island spectaculars.

The all-purpose display program is planned as part of the over-all advertising activity and often begins with the construction of major units in miniature, followed by finished displays of actual size for try-outs in test stores to determine effectiveness before adoption for the full-scale program.

Display strategy today is a far cry from the days when a few posters were bought because a display supplier said they were good. It requires the utmost ingenuity to devise materials that win acceptance and assured scheduling. But there is a definite need for the point-of-sale promotion that gives a good package an extra push beyond its normal shelf position, and both manufacturers and retailers know that selection of the right material pays off.

Something you want bagged?

LOW IN COST

Bag your products faster and easier with the Anderson Model 134 Bagger. The stainless steel bag trough will hold up to 200 bags . . . adjusts quickly for bag size. Blower, equipped with air filter, opens bag and keeps it free of foreign matter. Adjusts for height, and will tilt to the most convenient operating position. Quality made, of the finest materials for long life.

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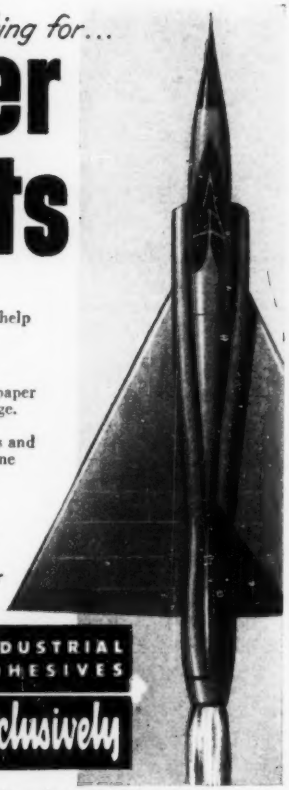

Sometimes use of a *more expensive* adhesive can help you to more profits by reducing production costs.

Findley high speed resin adhesives for packaging and paper converting give greater mileage. Handle many stocks without changeover. Eliminate rejects and reworking. Permit top machine speeds. Save you money!

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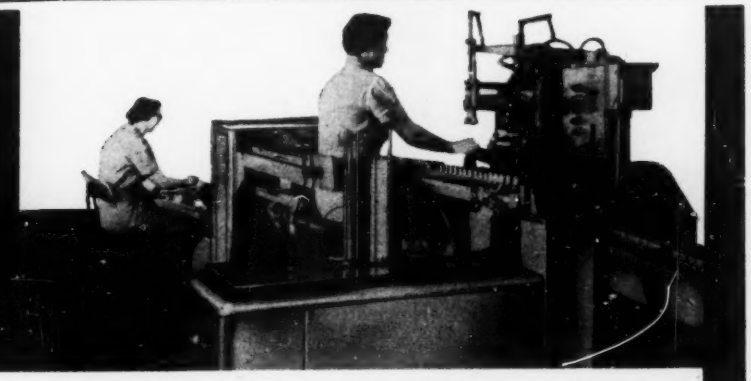
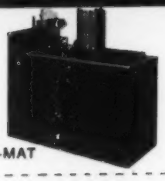
Integrated Cartoning and Labeling





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...Ups Production and Reduces Costs

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How

MARKEM

solves typical problems in

IDENTIFICATION and DECORATION

marking model railroad cars

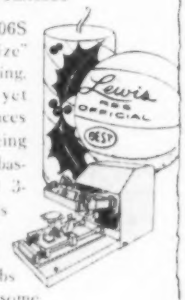
Several leading U. S. toy makers had used decals (costly both to buy and apply) on their replica model train cars. Authentic imprints are now made by Markem 25A machines—speeding production, lowering costs, improving looks.

imprinting food container lids

Bothered by the cost, delivery and inventory problems caused by short run lid printing jobs done "outside", a food retailer now prints the lids he needs as he needs them, using several 45ABE machines. Supply now matches demand, with the right marking method.

screen process printing: basketballs . . . to candles

Markem 90S and 106S machines "mechanize" screen process printing, giving fine detail yet heavy coverage. Surfaces and shapes now being marked range from basketballs, candles and 3-color instrument dials to play shoes, plastic bottles and billfolds. Excellent for many jobs—the *only* method for some.



These are typical of the thousands of marking problems Markem solves every year for all types of industries. The benefits of 46 years of experience are applied to every job—and can be to yours. Write Markem Machine Company, Keene 1, N. H.

MARKEM

What about polyethylene? *Third of a series*

[*Continued from page 119*]

the chart on p. 118. Each line represents changes in sealing *range*.

Progress in modification

The first overwrapping-machine manufacturer to put the findings of the developmental research to work is Hayssen Mfg. Co., which now has overwrap machines using printed polyethylene film running in a textile and a paper-products plant.

These units serve to highlight some of the polyethylene problems that have not been—and probably cannot be—solved by the resin suppliers and film converters.

First, the limitations: The unit operates at a maximum speed of only 35 packages per minute. And the extra mechanisms needed for polyethylene make these machines much more expensive than conventional overwrappers—anywhere from 35% to 40% more for a napkin wrapper to an estimated 100% extra (anticipated) for a carton machine. The polyethylene machines are also much more specific. Built for a single purpose, they have a very small range of adjustment.

But for all these objections, these machines do demonstrate progress. The manufacturer has effectively solved the problems of film folding and feeding—at least at low speeds. And the sealing section, directly adapted from Bakelite's experimental sealer, is both workable and efficient.

Here is a rundown on the new ideas applied in equipment:

On the feed end, the static charge that makes polyethylene so difficult to handle is brought under control by two or more conventional static eliminators. But Hayssen doesn't feel it is necessary or even desirable to eliminate all the static. A small charge left on the film actually helps in the feeding and forming sections of the machine and in holding the folds before sealing.

The limp handling qualities of polyethylene are offset by modifications in the feeding and cut-off section of the unit. Here, the film is brought under initial control by multiple rollers that exert a positive pull on the material—and avoid the push common to cellophane- and paper-wrapping machines.

Next, flexible spring belts are employed above and below the film web to carry it into the shear. The cut sheet is fed into the throat of the machine by twin V-belts, located below the web. They hold the film against a series of ball bearings and keep it under constant control.

A conventional product feed, where goods or cartons rise up under the film, is used on the polyethylene overwrapper. But the folders have extra formers and guides—and even air jets where necessary—to help fold the polyethylene film and hold the points in position for sealing.

In the sealing section, the basic Bakelite sealer has been slightly modified to make it more adaptable. As in Bakelite's experimental unit, Hayssen uses for semi-rigid packages three glass-cloth belts coated with Teflon. However, here the sealing action is intermittent instead of continuous. The two side heat sealers operate with a reciprocating action. Also, the fixed chill plates are cooled by a refrigeration unit rather than by water.

These modifications make it unnecessary to change the sizes of the sealing plates at different speeds. They are the same size as the end of the package. The extra cooling capacity derived from expansion refrigeration also handles the greatest possible speed range. As in the Bakelite unit, the bottom seam on the package is made by a single stationary sealer.

In the textile machine, sealing is simpler because of the seal location. Coated belts are located above and below the package, with a single sealer on the bottom.

Standard heat sealers are used. But Hayssen has found that despite the wide theoretical sealing range of polyethylene, close sealing control is critical. Therefore, these temperatures are accurately governed (within 2 deg. F.) by means of sensitive indicating pyrometers attached to each heater.

Drape wrapper

Another overwrapper, developed by Wrap-King Corp., applies polyethylene in a drape wrap with an underfold seal at 60 packages per minute. This wrapper is now in use for such round products as paper plates and lettuce. Despite the fact

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"Protecting America's food is our business. We comb 3,400,000 acres of woods to find suitable trees to make into protective papers. Some call us 'Tree Farmers'—we grow more trees than we use. So there will always be KVP Paper for the future."

The KVP Waxed Overwrap keeps your products fresher...

and moves 'em from shelf to supermarket cart fast!

Bread must stay *soft-fresh*...crackers must stay *crisp-fresh*...dates and raisins must stay *moist-fresh*...frozen meats must stay *air-tight*. And the way to do the job best, is the KVP way—with a highly specialized kind of printed waxed overwrap and a plain shell.

KVP Kalapak is made from specially selected paper, specially waxed to provide special protection for frozen foods.

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All of KVP papers for the food industry do a maximum job of selling because we handle the entire process from growing the trees to printing the finished job. We go even farther. We work with you to make sure your machines and our paper work efficiently together.

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THE KVP COMPANY KVP KALAMAZOO MICHIGAN

that many engineers have had discouraging results with rotary heat sealers on polyethylene, this machine uses both a roller sealer and a rotary film cut-off that are said to give good results.

It is also reported that a leading retail food chain has converted a wrapper made by Triangle Package Machinery Co. to apply polyethylene overwraps on such spherical produce as head lettuce and cauliflower.

However, speed is the main element lacking in all of these applications. There are quite a few packagers whose manufacturing capacity is satisfied by slow equipment. But volume packagers demand ever higher outputs—speeds that today range up to 160 units per min. with conventional non-thermoplastic packaging materials.

The real challenge

So far, development of overwrapping machinery for polyethylene has essentially proceeded along basic lines laid down more than 50 years ago, when the first paper overwrapper was developed. Engineers close to machinery development doubt that present polyethylene overwrapping equipment can ever attain the necessary high speeds, because its mechanical limitations are just not adaptable to polyethylene's difficult handling and sealing.

Therefore, many experts feel it is time to throw away the rule book and take a wholly fresh approach to the problem of running polyethylene as an overwrap. Such a new look may result from research now under way at Pennsylvania State University. Sponsored by a major food firm, the Quaker Oats Co., this study seeks to come up with new mechanisms—stressing continuous motion, speed, smoothness and easier automatic control—for sealing and handling polyethylene film.

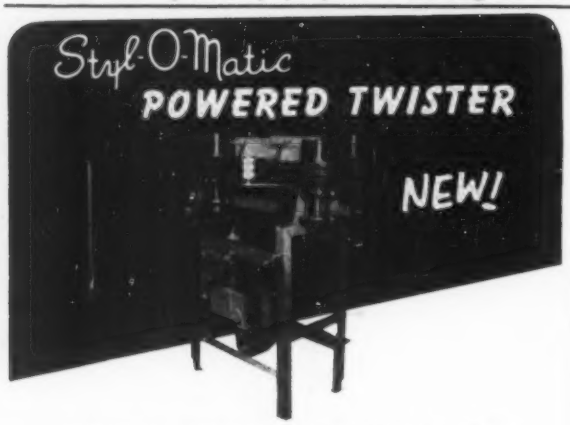
A number of possible approaches being investigated include rotary, band, impulse and radiation sealers, and an indirect method that employs a transfer material in which the heat is first developed.

This development program is being watched with keen interest by the packaging field because both film and machine men recognize the urgency for more basic research into principles underlying thermoplastic handling and sealing.

Nor are the problems and their solutions limited to the present polyethylene films. Resin research is progressing at a rate that may make many of today's polyethylene formulations obsolete tomorrow. And there are other thermoplastic films, old and new, that also demand development of high-speed equipment before their full packaging potentials can be realized.

Thus, modifications of existing machinery that fit only the minor peculiarities of a particular film will not, in the opinion of most observers, provide the full and final answer. A concerted effort by resin, film and machine men is needed to combine the broad chemical and physical characteristics which typify thermoplastics with suitable mechanical overwrapping means to create packaging machinery as new and useful as the packaging materials coming out of the laboratories.

Such pioneering will not only offer new economies to all packagers by enabling them finally to run the most economical materials on the most economical machinery, but will also profitably broaden the choice of materials for special applications.



TURNS 60 to 180 bottles per minute 270° or 360° to empty foreign matter. Hold containers upside down for approximately 18" for air cleaning if so desired. Overall length of unit 8' 8" – 32" for the powered section and 6' for the twister. Easily changed twister permits use for various size containers.

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The DRUPA is the yearly European Machinery Exposition for the Graphic Arts Industry, and the Paper and Paperboard Converting Industry, which takes place this year in Duesseldorf in May. Germany, the second largest machine shop of the world, next to this country, naturally will participate heavily and will display its machines and latest developments in a way never seen before.

Join your friends in the trade this year and visit the DRUPA. Our factory is well represented at the show and would welcome your visit, or at its factory near Duesseldorf. If we can assist you in your travel plans by mailing you folders on the DRUPA, or by answering any other questions which you may have, ask for our bulletin X-107.

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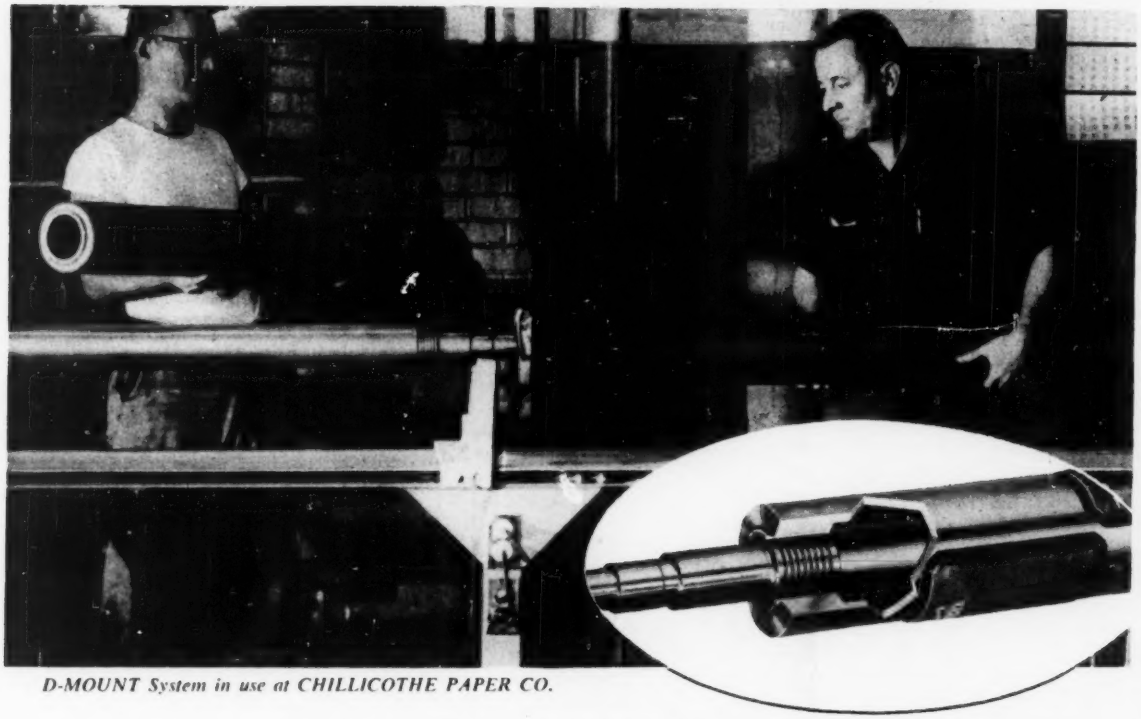

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*Reg. DuPont

Tape that tears poly

[*Continued from page 97*]

major problem in development of the new package was in finding an ideal string.

Since the laminating material is fed into the packaging machine as a continuous, rolled strip, the string had to be as small in diameter as possible. Otherwise, on large rolls of laminate, the added thickness of the string could distort the roll and cause handling problems. But a small string compounds the problems of strength and adhesion. The tear strings on early test packages either broke or pulled out of the laminate without tearing it. A range of various "tear" materials has been established for different envelope constructions.

The tear string on Carnation's package is a 3-lb.-test cotton thread with sufficient strength to tear the laminated materials, including over one mil of polyethylene, without pulling free.

The adhesion problem has been solved by making sure that the heat sealing of the edges of the package effectively anchors the string at both ends.

There is a direct relation, of course, between the strength and allowable size of the tear string and the weight of laminate that must be torn.

The heaviest laminate that has been tested thus far by Carnation is an aluminum foil coated with 1.5-mils of polyethylene. There is no indication that this is a limit, however. Test packages are now being prepared for several other uses with a 3-lb. cotton thread as a tear string. Metal alloy wires and polyester-film strings have also been successfully used. However, these merely indicate the great variety of materials that have shown promise experimentally.

The tear-string technique also has promise in the manufacture of containers using aluminum foil coated with heat-sealing lacquers. And—most significant of all—tests indicate that the string can even be adapted to unsupported polyethylene.[2] If this development lives up to its promise, the entire field of polyethylene packaging may undergo drastic change and expansion.

Food-operator reaction to Carna-

[2] See "What About Polyethylene?" MODERN PACKAGING, Jan., 1958, p. 130.

tion's new package has been impressive.

The food company's original plan was to hold up the distribution of the new package until the start of a promotion campaign with institutional accounts in December. The supply of pillow-pouch packages ran out earlier than expected, however, and for several weeks the new package was used, without advance notice or promotion, to fill outstanding orders.

The new package sold itself, for repeat orders from these accounts have all been significantly higher since shipments of the new-style pouch were received.

Thermoformed plastics

[*Continued from page 112*]

ing machine. Slide tracks, snap fits and trap-door constructions became popular. Opening and dispensing devices, many of surprising originality, opened up new merchandising potentials.

Among the first products to get a boost from thermoforms were hardware, household items, toys, notions and tools. Many of the items, for one reason or another, had never known what advantage a good self-selection package could achieve for them. Today it is recognized that thermoforms have carried whole categories and entire lines of products into big-volume rack-jobber and self-selection status.

The 1957 Gold Medal Award from *Variety Store Merchandiser* was given to a skin package of William Prym, Inc., Dayville, Conn., for belt buckles.

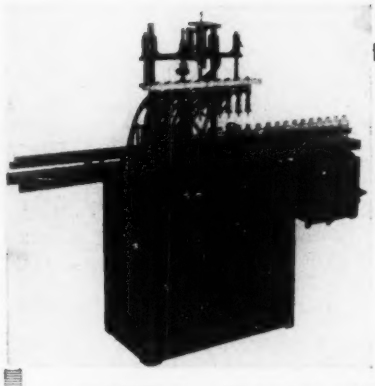
The hit of the Hardware Show in 1955 was an all-plastic, vacuum-formed package for door knobs by Washington Steel Products, Inc.[9]

One of the biggest and most important opportunities for effective use of thermoforms lies in industrial packaging.

Odd shapes are no problem; wide choice of plastics assures protection; transparency facilitates inventorying and stock selection.

Products in the industrial packaging field already using thermoforming to advantage include bearings packed in oil, line splicers skin packed in vinyl to eliminate cleaning prior to use and automotive re-

[9] See "An All-Plastic Blister," MODERN PACKAGING, Dec., 1955, p. 98.



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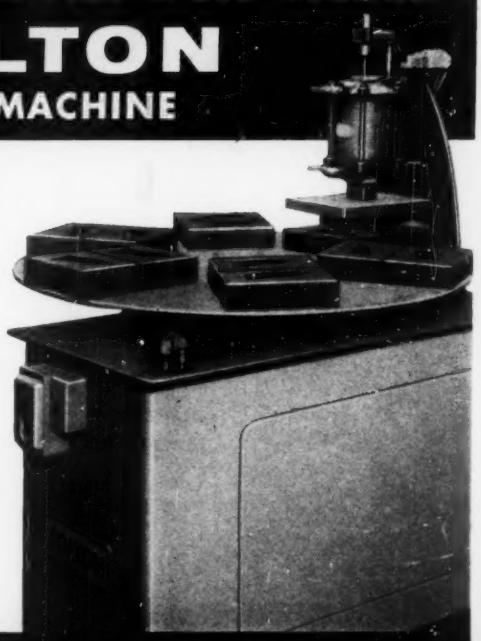

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placement parts packed in acetate strip packages for easy handling and immediate identification.

Until recently, much of the progress in thermoforming came from the smaller marketers. Gradually the national distributors are moving into this still-new field—for example, blister-packed G-E flashlight lamps; skin-packed Parker Pens; Polaroid cameras in a case fitted with a flocked polystyrene platform; Coats & Clark thread in blister packs.

What's ahead

Further tremendous expansion can be expected in the thermoforming field. Dollar value of all thermoformed packages was at least at $12,600,000 in 1957. The value is expected to double and then triple in the next few years.

A swarm of developments still to come will help spur the growth in packaging. Some of these are:

► Laminated polyethylene-polyester film, permitting heat seals to uncoated board, plus use of thin gauges for faster cycling and greater economy.

► More imbedment-type skin packages for hardware and similar products. This new construction eliminates need for a card and reduces material costs significantly. Product is almost totally imbedded in plastic. Printed copy is provided on paper hang-up collar.

► Automatic loading and sealing equipment, which will make high-speed mass-production packaging lines practical for thermoformed containers. Intermediate-speed, semi-automatic machines are already available.

► A new machine that continuously forms 10-gauge oriented polystyrene lids at speeds of 6,000 or more units an hour.

► New machines for pressure forming.

► Important applications for polyethylene—especially for foods.

► Applications for polyester films making use of their strength, clarity and inertness.

► Volume growth of thermoforms for poultry, frozen foods and delicatessen items.

► Higher skills in thermoforming, including greater success in engineering equipment and molds, and improved methods of focusing heat and cooling formed sheet.

► Package design improvements engineered to thermoforming's needs; greater use of pre-scored strips, package designs for nesting and maximum economy in handling and shipping.

► Improved grades and combinations of plastic sheet—developed specifically to overcome forming problems. Larger, wider rolls will be made available and they will be shipped on skids for easier handling.

► Better user know-how. Packagers will have to know plastic sheet the way they now know folding boxboard. They'll have to know when vacuum forming, pressure forming or molding is called for. They'll have to create package designs that can exploit the advantages of sheet plastics and avoid the limitations.

Those who develop such know-how stand to inherit some of tomorrow's biggest and most rewarding merchandising successes.

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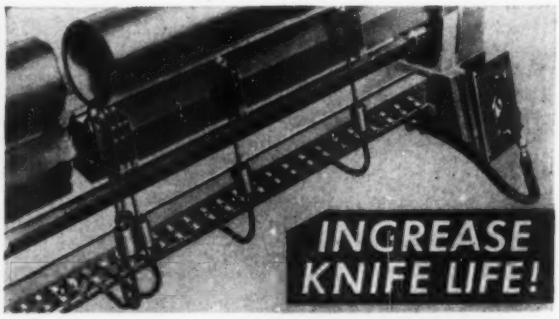

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The Model 654 with hardened side plates is precision assembled to maintain accurately slit widths. It will increase knife life between sharpening approximately four to five times. Exact control of slitting pressures can be maintained or changed by a simple valve adjustment. The knives automatically retract when air pressure is released. When used with our Model 702 Templet Manifold, change over of slit widths can be accomplished in two minutes.

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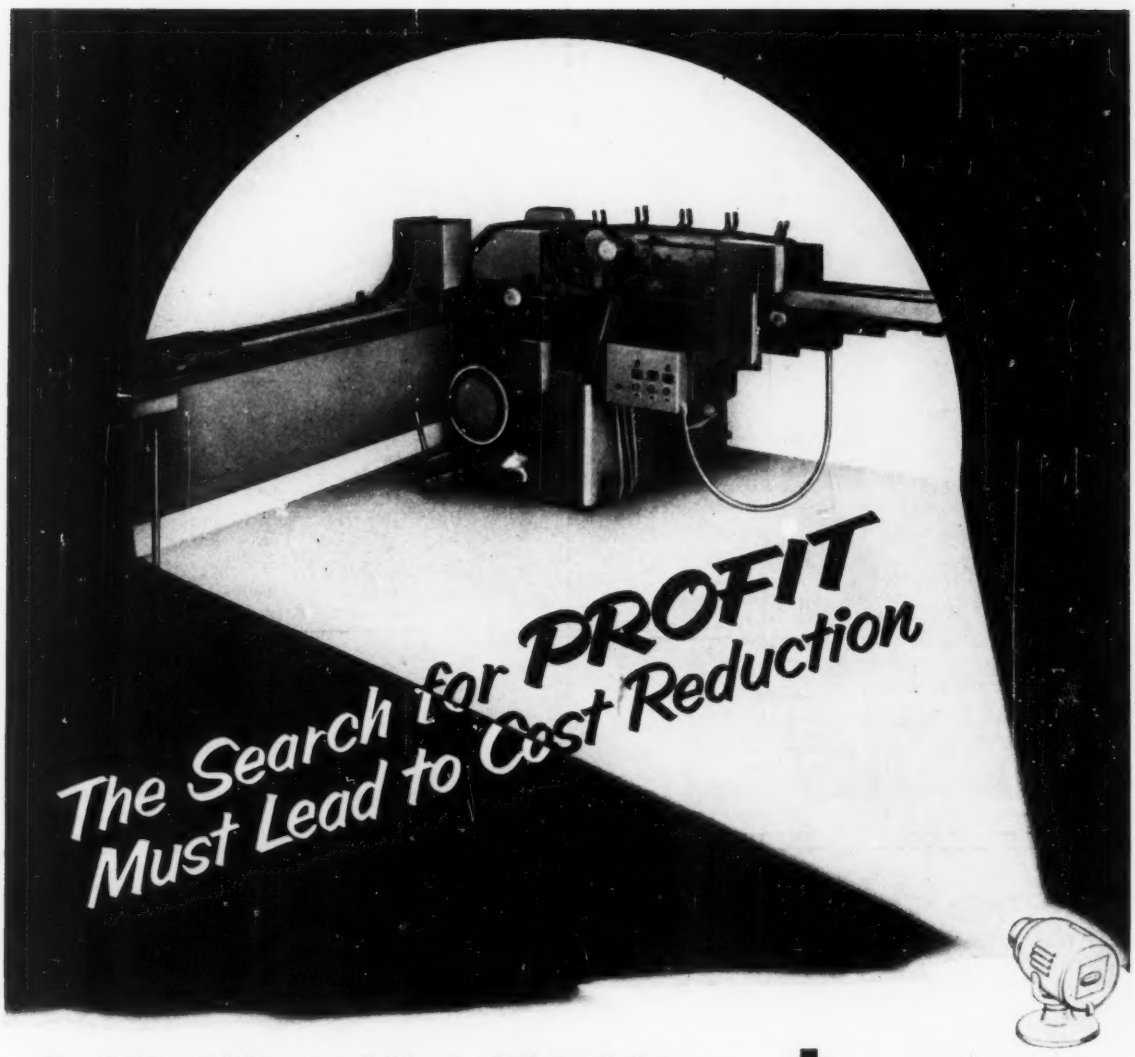

C&K's Wrap-King Machines

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- **Permit broad choice of films, foil & paper**

At Crompton & Knowles Packaging Corporation unusual packaging problems are routine. That's because C & K's versatile Wrap-King machines are so easily adaptable to so many different sizes and shapes of products — so easily adaptable to so many varied bundling and overwrapping problems.

The machine shown above is a typical example. A standard Wrap-King Model B was adapted to collect six cartons of metal parts, arrange them in multi-packs and overwrap them in Vitafilm* — all at high speed.

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*Vitafilm — a Polyvinyl chloride — T.M. The Goodyear Tire & Rubber Co., Akron, Ohio.

For overwrapping food, dairy, meat, bakery, and industrial products — C&K's Wrap-King overwrapping and bundling machines.

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Waste, rejects, and the cost of reworking can take all the profit out of your packaging or converting production.

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WITHOUT TEARING OR OPENING UP

This dual-purpose 30" sheet plastic fabricator gives you the advantages of TWO machines at ONE price. The Folder-Creaser handles cast and extruded thermoplastic sheets .005" to .020". Folds minimum of 700 per hour at 180° and "instant creases" 90° angles without rejects, tearing or opening up. Faster production and SAVED MATERIAL pays for this machine in a few months. Get the facts!

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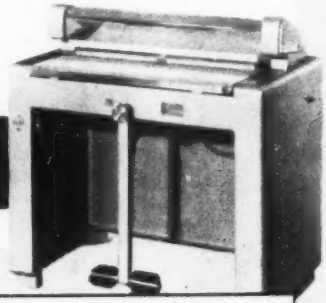

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AUTOMATIC LABELER. Leaflet describes line of production-line imprinting machines which print identification and code data on from 1 to 5 sides of boxes, cans, cases and crates of every size. Illustrations, all data included. Adolph Gottscho, Inc. **(B-884)**

PAIL CLOSURES. Catalog shows 24 variations of pail closure assemblies of the nozzle, spout, end-seal, collapsible and cap types which are applicable to one standard opening. American Flange & Manufacturing Co., Inc. **(B-862)**

AUTOMATIC CARTON FILLERS. 8-page folder describes line of carton filling and sealing machinery. Brief description and specifications are given on 6 models as to speed, carton size, glue, filling method and optional equipment. FMC Packaging Machinery Div., Stokes & Smith Co. **(B-865)**

CORRUGATED CARTONS. 20-page booklet makes suggestions for building efficient corrugated box packaging operations. Covers such points as correct size, packing, sealing methods, stacking, loading procedures, testing, storing, carrier regulations. Hinde & Dauch Co. **(B-857)**

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FILM PRINTER. Folder gives specifications and features of a flexographic press for printing all types of films, (polyethylene, vinyl, cellophane, mounted foil) at a rate of 500 feet of cellophane, or 400 feet of polyethylene per minute. Kidder Press Co., Inc. **(B-861)**

PRESSURE SENSITIVE TAPES. 4-page illustrated leaflet presents features and specifications on a clear cellophane tape for cartons and wrappers, etc., and a waterproof acetate tape for use on metal and plastic lid-style containers. Permacel Tape Corp. **(B-878)**

STEEL STRAPPING MANUAL. Illustrated 22-page booklet describes steel strapping for reinforcing, pelletizing, bundling, bailing and tying. Catalogs types of steel strapping and seals, strapping machines, stretchers and accessories. Acme Steel Products Div., Acme Steel Co. **(B-882)**

FRESH PRODUCE CONTAINERS. Corrugated boxes for fresh fruit and vegetables are illustrated in 4-page folder. Among the basic designs shown are full-telescope boxes, trays and gift packages. Features of each type fully described. Gaylord Container Corp. **(B-871)**

Stretchable paper introduced by Westvaco

A $25,000,000 paper-making machine to manufacture its new stretchable kraft paper was dedicated last month at Charleston, S.C., by the West Virginia Pulp & Paper Co. The new product's built-in elasticity —up to 20%—is designed to make it resilient to impact. It is said to be five times tougher than other papers of comparable weight.

Toughness of stretchable kraft paper is shown in this strobe photograph comparing new material (right) with regular kraft (left). Both were subjected to 18-in. drops of billiard balls. Cue ball rips through regular kraft, but the 10 ball bounces off stretchable paper without rupturing the sheet. X-10 is the lab designation of extensible paper.

The paper is immediately useful to packagers in the form of multiwall bags. Other suggested applications include: special bags to hold flour, mattresses or new metal cans; rust-inhibitor-impregnated wrappings for machined-engine parts; pressure-sensitive and other adhesive tapes; and strong, moisture-resistant containers made of the material laminated, coated or impregnated with asphalt, polyethylene, wax, burlap or other materials. In some grades it is being tested as a cloth substitute.

Generically known as extensible paper, it is being marketed by West Virginia as Kraftsman Clupak in basis weights from 30 to 70 lbs. The paper has a clean, smooth surface that permits normal package forming and printing. It is priced 10 to 15% higher than comparable weights of standard kraft paper, but is said to be practical in lighter weights for paper savings up to 20%. Converters are now experimenting with initial samples.

Developed by Sanford L. Cluett, inventor of the Sanforizing process for textiles, the new paper-making technique shrinks the still-wet web of paper in the pressure of an inch-thick rubber belt running taut against a huge metal roller. The manufacturing process will be liberally licensed to other paper makers by Clupak, Inc., a new corporation created by Westvaco and Cluett, Peabody & Co., which holds patent rights to the process.

Polyethylene film for fruit

[*Continued from page 144*]

Co., New York, for supplying much of the information on bananas; to the Bakelite Co., Bound Brook, N.J., for supplying information on polyethylene permeability; to Drs. Wayne E. Tolle and Raymond E. Anderson for laboratory assistance in evaluating film liners for apples, strawberries and peaches.

References

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5. Hardenburg, R. E., "Polyethylene Film Box Liners for Reducing Weight Losses and Shriveling of Golden Delicious Apples in Storage," *Proc. Amer. Soc. Hort. Sci.*, 67: 82-90, 1956.

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7. Kaufmann, Kenneth A., "Higher-

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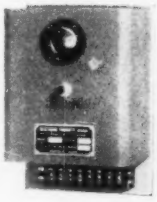
Model SD-1



Versatile, low cost counter — will tabulate up to 50 units per second in continuous operation. Available with totalizer . . . can be placed several hundred feet from switch contacts.

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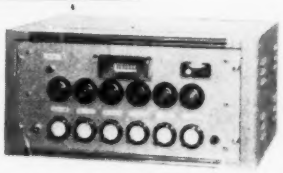

Preset electronic counter— up to 5,000 units per second — direct readout totalizer. Will "batch count" any quantity from 1 to 1,000,000. Can be coordinated to secondary circuit for "kicking" devices, etc.

Model LF

Lineal Footage device — can be used with other "Decitron" electronic units to accurately measure and tabulate lengths of wire, rope, sheet stock, paper, cloth, etc. May be used with digital readout printer or visual totalizer on counter.

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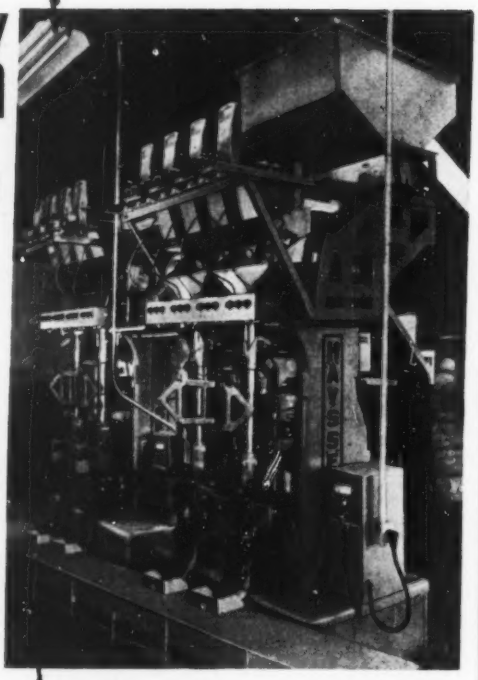

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Whatever your product; solid, liquid or powder, we can produce a better package at less cost.

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Neat change-over code

Merely by reversing placement of revenue stamp, Philip Morris Co. discovers an intriguing way to dis-

tinguish its packages of new Parliament cigarettes with the "hi-fi" (for high filtration) filter from the former ones during the distribution change-over period.

On the new "hi-fi" Parliament packages, the "A-20" part of the stamp is on the left-hand side of the package; on the old, at the right side. Dealer and customer can tell immediately if they are getting the improved product, reportedly with an impressive reduction in tar and nicotine content.

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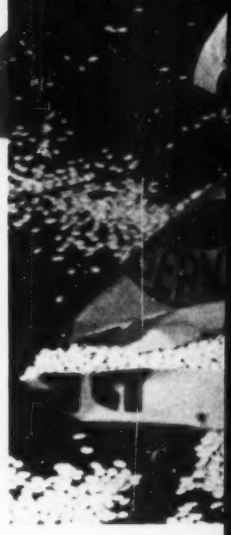
EXTENSIBLE KRAFT PAPER

WEST VIRGINIA PULP AND PAPER COMPANY

These photographs were taken under conditions identical to those explained below; in all cases, Kraftsman CLUPAK papers were tougher than regular Kraft paper even when lighter weight CLUPAK paper bags were used. ("X-10" is the laboratory designation for CLUPAK paper.)

KRAFTSMAN CLUPAK™ PAPER STRETCHES

Extensible paper means strength, economy, easier handling and storing.



Westvaco's revolutionary, new Kraftsman CLUPAK paper introduces an entirely new standard in packaging performance: *Toughness.* Now available to Kraft paper users, these grades are being produced in a wide variety of basis weights. Controlled amounts of stretch are built in so that Kraftsman CLUPAK paper yields on impact, absorbs more energy without failing than regular Kraft.

STRENGTH, APPEARANCE, ECONOMY

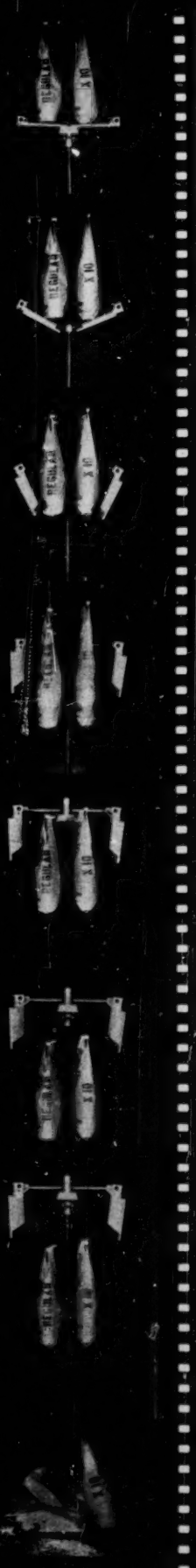
The greater toughness of Kraftsman CLUPAK paper permits the use of less total weight for sacks and bags. Even though the price of Kraftsman CLUPAK paper is slightly higher than regular Kraft, the use of less weight results in over-all economy *with better performance.*

Kraftsman CLUPAK paper can be made to meet specific needs of quantity users. The amount of stretch can be engineered to meet most packaging requirements.

At the same time Kraftsman CLUPAK papers have a clean, smooth surface, ideal for printing and maintain other specifications at required levels. Such adaptability means a better product for packaging and other uses.

The remarkable toughness of Kraftsman CLUPAK paper is demonstrated in butt drop tests as shown in these photographs.

While extensive field tests prove Kraftsman CLUPAK paper to be superior to regular Kraft for many uses, Westvaco research is bringing about continuing improvement. These further developments will open up many new possibilities for packaging and other uses.



FOR EXAMPLE, ONE SERIES OF TESTS SHOWED THESE RESULTS:

Fifteen multi-wall sacks of regular Kraft paper, each with plies of 50 lb., 60 lb., and 70 lb. stock—total basis weight of sacks—180 lbs.

TEST	AVERAGE NUMBER OF DROPS SURVIVED BY 15 SACKS
48" Flat Drop	4.8
24" Side Drop	3.0
24" Butt Drop	2.4

Fifteen multi-wall sacks of Kraftsman CLUPAK paper, each with three plies of 50 lb.—total basis weight of sacks —150 lbs.

TEST	AVERAGE NUMBER OF DROPS SURVIVED BY 15 SACKS
48" Flat Drop	9.4
24" Side Drop	8.0
24" Butt Drop	13.6

WITH LESS PAPER, KRAFTSMAN CLUPAK PAPER OUT-PERFORMED REGULAR KRAFT PAPER TWO-TO-ONE OR BETTER.

KRAFTSMAN CLUPAK™ paper gives packaging a new standard: TOUGHNESS

Until now, paper users have relied on "total destruction" tests—tensile strength, burst, and tear—to measure paper quality. To predict performance of Kraftsman CLUPAK paper the standard of measurement is—TOUGHNESS.

The key to the strength of Kraftsman CLUPAK paper is its ability to absorb more energy. The chart below shows this in a comparison of tensile strength and stretch of regular and Kraftsman CLUPAK paper. While the raw tensile strength of regular kraft paper is greater, *it actually takes more total force (energy) to break Kraftsman CLUPAK paper.* It is something like the performance of a glass bottle and a polyethylene bottle. Though glass has a higher breaking tensile, polyethylene will resist a harder blow—it yields and thus absorbs impact. Kraftsman CLUPAK paper yields under impact and thus is tougher.

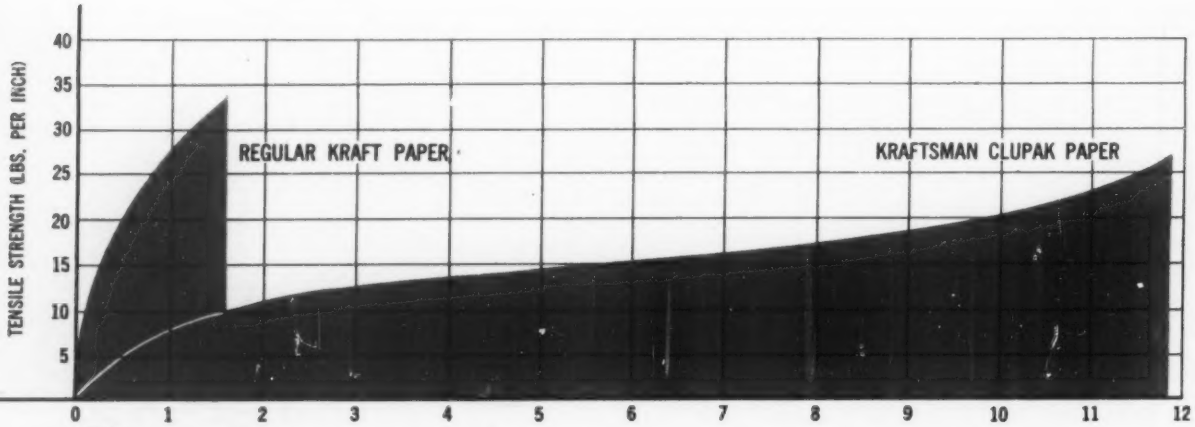


CHART SHOWS THAT WHILE REGULAR KRAFT PAPER HAS HIGHER TENSILE STRENGTH, THE KRAFTSMAN CLUPAK PAPER IS FIVE TIMES TOUGHER AS SHOWN BY THE RED AREAS OF EACH CURVE (AREA IS PROPORTIONAL TO WORK PERFORMED).

Westvaco's representatives will be glad to demonstrate this revolutionary new material and discuss its possibilities for your packaging problems.

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LIQUID FILLING EQUIPMENT. Pamphlet describes line of volumetric manual and automatic bottle, tube, vial and ampul filling machines for free-flowing and viscous-liquid drugs and cosmetics. Popper & Sons, Inc. **(B-851)**

MANUAL BAG PACKAGER. Folder describes unit designed to aid in the manual packaging of bulky and irregularly-shaped items into film, paper, gusseted, plain or flat bags. Includes device that injects air into polyethylene bags, breaking static block. Errich International Corp. **(B-852)**

TRANSPARENT CONTAINERS. 4-page folder illustrates and describes extensive line of stock extruded cellulose, acetate, butyrate, rigid and semi-rigid lightweight vials and containers of all shapes—including round, square, triangular, tube, sleeve, and trapezoidal. Extruded Plastics, Inc. **(B-853)**

RIGID PLASTIC BOXES. Illustrated 16-page catalog gives dimensions and prices of a line of stock molded transparent and opaque plastic boxes, including hinged, telescope, slide cover, square, rectangular, round, and compartmented. Bradley Industries. **(B-854)**

CONTINUOUS-MOTION BAG CLOSER. Leaflet describes line of automatic conveyor-fed bag-closing machines for folding and/or heat-sealing most types of plain or multiwall bags for granular or powdered contents. Features, specifications listed. George H. Fry Co. **(B-855)**

HEAT SEALING EQUIPMENT. New catalog describes a full line of heat-sealing equipment, prepackaging tables, and packaging accessories. Cleveland Lathe & Machine Co. **(B-856)**

CORRUGATED CARTONS. 20-page booklet makes suggestions for building efficient packaging operations where corrugated boxes are involved. Covers such points as correct size, packing, sealing methods, stacking and loading procedures, testing, storing, carrier regulations. Hinde & Dauch Co. **(B-857)**

FLEXOGRAPHIC PRESS AND REWINDER. Brochure presents features and specifications of a web-fed, high-speed flexographic printer and rewinder, available in press widths from 15 to 30 inches, for use on cellophane, polyethylene, paper and other plastics films. Lee Machinery Corp. **(B-858)**

FIBRE CANS. Literature illustrates line of metal-capped, all-fibre, lined and unlined fibre cans. Includes data on can construction and on such dispensing devices as pouring spouts, plugs, and sifters. The Cleveland Container Co. **(B-859)**

COLLAPSIBLE TUBES. Catalog gives specifications and describes uses for tin, lead, aluminum, single and multi-use, lined, and unlined collapsible tubes and shells, and a variety of special-purpose tube openings, strips, closures, applicators, metal can spouts. Standard Collapsible Tube Co. **(B-860)**

FILM PRINTER. Folder gives specifications and features of a flexographic press for printing all types of films, (polyethylene, vinyl, cellophane, mounted foil) at a rate of 500 feet of cellophane, or 400 feet of polyethylene per minute. Kidder Press Co., Inc. **(B-861)**

PAIL CLOSURES. Catalog shows 24 variations of pail closure assemblies of the nozzle, spout, end-seal, collapsible and cap types which are applicable to one standard opening. American Flange & Manufacturing Co., Inc. **(B-862)**

ICE CREAM PACKAGING ESTIMATOR. Slide rule provides on-the-spot calculations for any size ice cream carton, cup, slice or bar. Shows at a glance units filled per minute, gallons packed per hour. Anderson Bros. Mfg. Co. **(B-863)**

PROPELLANTS. 36-page technical report gives detailed pressure and density data, in both tabular and graphic form, of "Freon" aerosol propellants. E. I. duPont de Nemours & Co. **(B-864)**

AUTOMATIC CARTON FILLERS. 8-page folder describes line of carton filling and sealing machinery. Brief description and specifications are given on 6 models as to speed, carton size, glue, filling method and optional equipment. FMC Packaging Machinery Div., Stokes & Smith Co. **(B-865)**

STAMPING PRESS. Data sheet describes an air operated, pedal-actuated, roll-leaf hot stamping press for paper, and soft or hard plastics, that makes up to 40 impressions a minute, handles roll-leaf stock up to 6½ inches wide. Specifications included. Peerless Roll Leaf Co., Inc. **(B-866)**

LETTERPRESS INKS. Booklet containing color samples of "Glokote" inks designed for printing on cast-coated, high-gloss surface papers, includes chart on light-fastness and alkalinity of each color. Sinclair & Valentine Co. **(B-867)**

CARTONING EQUIPMENT. Illustrated 8-page brochure gives detailed analysis of the design, construction and operating features of a high-speed fully automatic "constant motion" cartoner. R. A. Jones & Co., Inc. **(B-868)**

PORTION PACKAGING MACHINES. Illustrated literature discusses line of "unit" packaging machines for powdered or granulated substances, small parts, candies, tea, etc., and that heat seals on 3 or 4 sides, can meter one or two ingredients into each bag. Specifications. Industrie-Werke Karlsrue. **(B-869)**

FOIL FOOD CONTAINERS. Illustrated 4-page leaflet presents a line of aluminum tray, casserole and divided foil containers for packaging frozen foods. Ekco-Alcoa Containers, Inc. **(B-870)**

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PACKAGING BAKERY PRODUCTS. 20-page booklet describes methods for handling, storage of waxed paper in bread wrapping operations. Gives pointers on installation, operation and maintenance of wrapping equipment. Waxed Paper Merchandising Council, Inc. (B-871)

FRESH PRODUCE CONTAINERS. Corrugated boxes for fresh fruits and vegetables are illustrated in 4-page folder. Among the basic designs shown are full-telescope boxes, trays and gift packages. Features of each type fully described. Gaylord Container Corp. (B-872)

HARDWARE PACKETING MACHINERY. Folder gives specifications and features of heat-sealing packeting machine which automatically feeds, counts, wraps, seals and codes small and large hardware parts in packets as large as 4½ x 5 inches. Brown Bag Filling Machine Co., Inc. (B-873)

MOLDED POLYETHYLENE CONTAINERS. Catalog contains data on a wide range of stock bottles, jars, carboys, and closures which include spray, drop, pressure, pouring and direct-application dispenser types. Plax Corporation. (B-874)

VACUUM FORMING MACHINES. Folder contains price, data sheets, and specifications for a vacuum-forming machine, and accessory equipment such as slitters and die press, for "skin" or blister packaging. Skin-Pack, Inc. (B-875)

WRAPPING METHODS. 8-page service manual describes various wrapping and bundling methods and materials. Includes data on line of special-purpose wrapping adhesives. Paisley Products, Inc. (B-876)

CARTON FORMING MACHINE. Leaflet gives features of a machine designed to produce a wide range of sizes of 2-piece or hinged-cover glued-up boxes from flat blanks at a rate up to 4500 per day. United Shoe Machinery Corp. (B-877)

PRESSURE SENSITIVE TAPES. 4-page illustrated leaflet presents features and specifications on a clear cellophane tape for cartons and wrappers, etc., and a waterproof acetate tape for use on metal and plastic lid-style containers. Permacel Tape Corp. (B-878)

DRIPLESS METAL CAN. Illustrated 8-page folder presents features of a non-drip metal can with screw cap closure for edible liquids, household supplies, medications, chemicals. American Can Co. (B-879)

LIQUOR PACKAGING. Elaborate illustrated portfolio shows wide variety of decorative jigger and pouring caps and stoppers for liquor bottles and decanters. Armstrong Cork Co. (B-880)

BOX-WRAP PAPER. Booklet of samples presents coated high-gloss light-fast papers in a range of colors from pastel to deep tones, and suited to letterpress, offset, flexographic or gravure printing. Champion Papers. (B-881)

STEEL STRAPPING MANUAL. Illustrated 22-page booklet describes steel strapping for reinforcing, pelletizing, bundling, baling and tying. Catalogs types of steel strapping and seals, strapping machines, stretchers and accessories. Acme Steel Products Div., Acme Steel Co. (B-882)

SPECIAL PURPOSE PAPERS. Information file contains samples of 3 heavy duty papers usable in packaging and shipping: a neutral paper for ferrous and non-ferrous metals; a fiberglass reinforced type; and a mold resistant paper. Test data, properties listed. Mosinee Paper Mills Co. (B-883)

AUTOMATIC LABELER. Leaflet describes line of production-line imprinting machines which print identification and code data on from 1 to 5 sides of boxes, cans, cases and crates of every size. Illustrations, all data included. Adolph Gottscho, Inc. (B-884)

GLASS LABELING GLUE. Leaflet describes an adhesive designed for glass jar and bottle labeling, including opal-ware. Includes suggestions for use. Swift & Co. (B-885)

PACKAGING EQUIPMENT. 16-page illustrated catalog shows packaging machinery, including carton feeder, bottom sealer, lined carton former, net weigher, top closer and dryer. Gives all specifications and features of each. Pneumatic Scale Corporation, Ltd. (B-886)

LABEL PAPERS. Test packet contains samples of water-soluble adhesive label papers said to feed, deliver, jog, perforate, and die-cut like ungummed papers. Gives information on properties and printing qualities. Nashua Corp. (B-887)

SELECTING CORRUGATED CONTAINERS. 16-page illustrated booklet gives procedures for selecting product containers, includes table of test requirements. Discusses carton construction types of joints, product protection requirements, size and style. Stone Container Corp. (B-888)

"POLY ON MYLAR" SAMPLE. Literature describing characteristics of company's polyethylene-cellophane extrusion-laminate and "poly on Mylar" extrusion-laminate in several grades is enclosed in a sample bag of "P.O.M." film. Includes yield charts, price list. Print-A-Tube Co. (B-889)

MULTI-COLOR FLEXOGRAPHIC PRESS. Literature lists specifications for flexographic press designed for printing, tinting and coating film, foil and paper stock. Press provides work speeds up to 600 ft. per minute. Manhasset Machine Co. (B-890)

TABLET COUNTING AND FILLING MACHINE. Literature describes machine that will count tablets and capsules, and fill them into vials or bottles at speeds up to 1200 containers per hr. The Burnet Co. (B-891)

MECHANIZED SCREEN PROCESS. Mechanized screen process printing is the subject of a new 4-page booklet in which the advantages of fluorescents, opaques and metallics are explained. Color Reproductions, Inc. (B-892)

MOLDING CARTONS. 24-page illustrated booklet presents steps of making special-purpose folding cartons, particularly for foods. Covers the subject from planning to finished item, including paperboard, printing, finishing. Berles Carton Co., Inc. (B-893)

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MODERN PACKAGING

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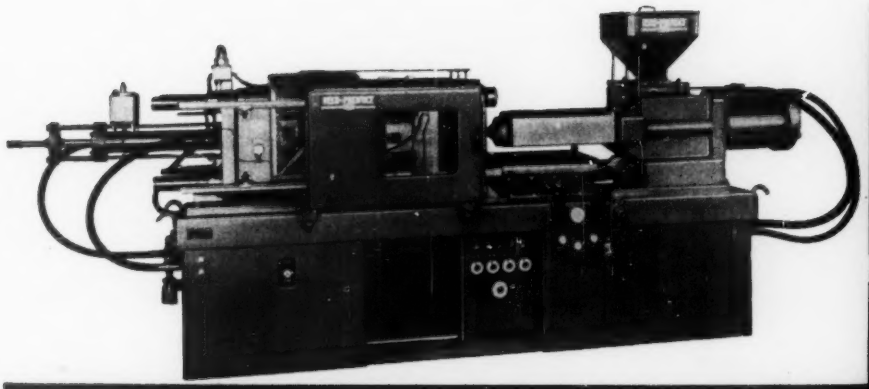

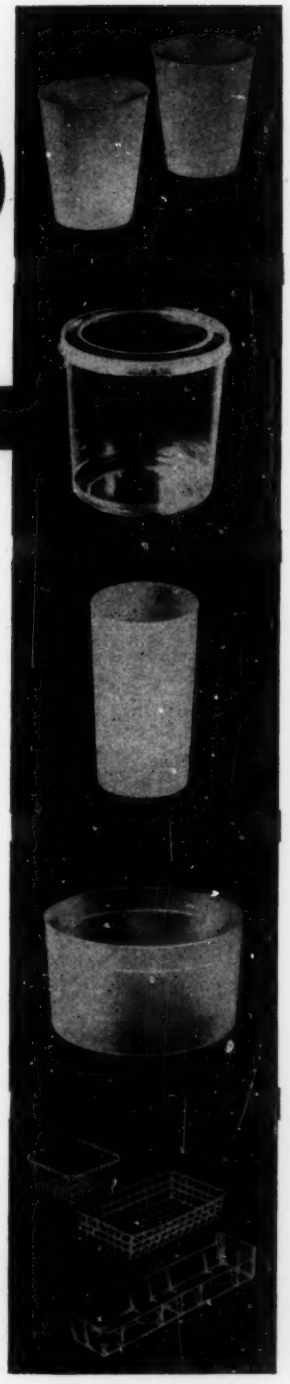

For high-speed, automatic Container Molding, Check these FOUR NEW REED FEATURES

Here are four big engineering advances that set today's 175T — 4/6 oz. REED way out in front for the high-speed, automatic operation that helps you cut your container costs.

New twin nozzle arrangement means faster, automatic molding. A Reed-Prentice exclusive, this nozzle alternates with the standard single nozzle to increase the machine's versatility.

New Jumbo heating cylinder gives you twice the capacity, assures speedier plasticizing and more material for heavy shots and fast cycles.

New high-torque, 15 H. P. motor is standard on the 4/6 oz. REED: In sustained production, a 175T with twin nozzles is now *molding 1,200 one-pint containers an hour* in a two-cavity mold.

New long-stroke model (shown above) gives you infinite mold stroke adjustment between 6" and 12", is ideal for deep draw containers.

This 4/6 oz. REED is one of a full line of injection machines engineered for fully-automatic, modern molding. Call Reed-Prentice, a subsidiary of Package Machinery Company, today for descriptive literature and full details.

If you buy containers and would like the names of competent molders in your area, write to us at Worcester. There is no obligation.

[redacted]

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Something goes into this box besides crayons...

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SALES OFFICES: NEW YORK, N. Y.; CHICAGO, ILL.; NEW HAVEN AND VERSAILLES, CONN.; BOGOTA, N. J.; BOSTON AND PALMER, MASS.; CLEVELAND, COLUMBUS AND STEUBENVILLE, O.; PHILADELPHIA AND PITTSBURGH, PA.; MARION, IND.

FOLDING BOX PLANTS: BOGOTA, N. J.; NEW HAVEN AND VERSAILLES, CONN.; PALMER, MASS.; COLUMBUS AND STEUBENVILLE, OHIO; PITTSBURGH, PA.; MORRIS, ILL.; MARION, IND. • PAPER BOARD MILLS: BOGOTA, N. J.; NEW HAVEN, MONTVILLE AND VERSAILLES, CONN.; MORRIS, ILL.; READING, PA.; STEUBENVILLE, OHIO; WHITE HALL, MD.

Thermoform meeting

Every aspect of vacuum forming was discussed in a two-and-a-half-day conference sponsored by the American Management Assn. at the Hotel Commodore in New York, Jan. 6 to 8.

Some 250 persons attended the conference, in which 25 authorities representing users, materials suppliers, equipment manufacturers and custom loaders discussed the successes, trends and new developments in this expanding field.

Among the advances cited in thermoforming were the new blister packs adopted by Coats & Clark for a self-service line of thread and zippers; skin-pack packages for Parker Pens and a new machine developed for General Electric to package automatically 300 flashlight lamps a minute (see this issue, p. 194).

The wide range of plastics that can be used was discussed. Special emphasis was placed on the new applications that loom for oriented polystyrene, polyethylene and polyester, and polyester laminates. Figures were given comparing the costs of skin and blister packaging with a view to showing when one or the other of these two methods would be most practical from a cost point of view. Progress was outlined in the development of forming lines teamed up with an extruder for continuous extrusion, forming and finishing operations.

The advances in pressure forming were dramatically illustrated in a series of slides showing the precision and high speeds characteristic of this method. One example was a milk cap formed from non-toxic 10-gauge vinyl sheet on machines that each have a production capacity well over a million caps a day (see this issue, p. 112).

Thermoforming was described as a field whose output will reach a $100-million total by 1962 and $250 million by 1967. These totals include all types of thermoformed items—products as well as packages.

Thermoformed packages, it was said, will challenge as well as augment many established types of containers. Packagers must keep abreast of thermoforming advances, a spokesman for a leading converting company warned, or they will fall dangerously behind the pace of other packagers and marketers.

PMMI exposition

Visitors at the second Packaging Machinery & Materials Exposition in Atlantic City next month will be able to view 25% more exhibit area than at the first show two years ago in Cleveland, according to K. B. Hollidge of Arthur Colton Co., chairman of the show committee for the sponsoring Packaging Machinery Mfrs. Institute. The exhibit in Convention Hall will run from March 25 to 28.

Supplementing the exhibit and running from March 24 to 26 in three morning sessions will be fast-moving technical seminars conducted by the Packaging Institute's Technical Operations Committee, headed by L. H. Zahn of Ciba Pharmaceutical Products, Inc.

Zahn

Latest packaging materials and the new machines developed to handle them will be discussed at the first session on Monday, March 24. Tuesday's program on management will feature a mid-session keynote address by a nationally prominent speaker, as yet unnamed. The final session on Wednesday will offer technical papers and discussion on practical industry aspects.

Packaging equipment will be shown in actual operation. The booths will be staffed by engineers and technicians ready to give on-the-spot answers to individual packaging problems.

Machinery on exhibit will stress greater speed, more flexibility and improved controls, according to advance reports. Greater accuracy, simplified maintenance and economy of packaging materials will also be emphasized.

For foot-sore convention goers, several conference areas will be spotted around the hall. And three vertical trade associations will maintain information centers.

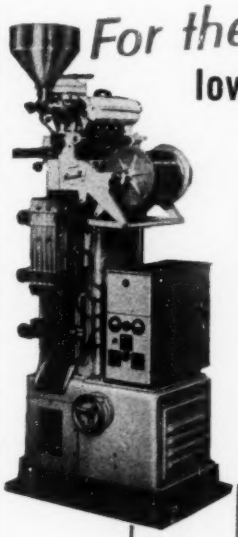
Over-all planning of the exhibition is under the direction of the executive committee of the Packaging Machinery Mfrs. Institute. In addition to Chairman Hollidge, this group is composed of W. B. Bronander, Scandia Mfg. Co.; J. H. Richmond, Potdevin Machine Co., and E. J. Abendschein, Chisholm Ryder Co. of Pennsylvania.

For the consumer—

attractive, convenient packaging

For the manufacturer—

low production costs, versatility, and great flexibility



The Hansella 131 Universal Packaging Machine gives you this double benefit. A high production unit, the Hansella 131 produces fin-seal type packs—the handy, disposable packages that are becoming increasingly popular with today's shoppers.

From the printed roll to the finished, filled bag—done automatically in one operation on the Hansella 131.

	Width of Bag	Length of Bag	Production Rate
Simplex	1½" to 6"	2" to 6"	Up to 60 per minute
Duplex	1½" to 3"	2" to 6"	Up to 120 per minute

PRODUCTS Liquids, semi-liquids, powders, granules and solids.

FEEDS Pump, auger, volumetric feed, and electronic counter are available and easily interchangeable. The change-over can be accomplished in a matter of minutes—a big advantage for contract packagers or for in-plant packagers handling an extensive variety of products.

FILMS All heat sealable, flexible films, including plastics and foils.

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American Factory Branch: HANSELLA MACHINERY CORPORATION
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BAGORAMA

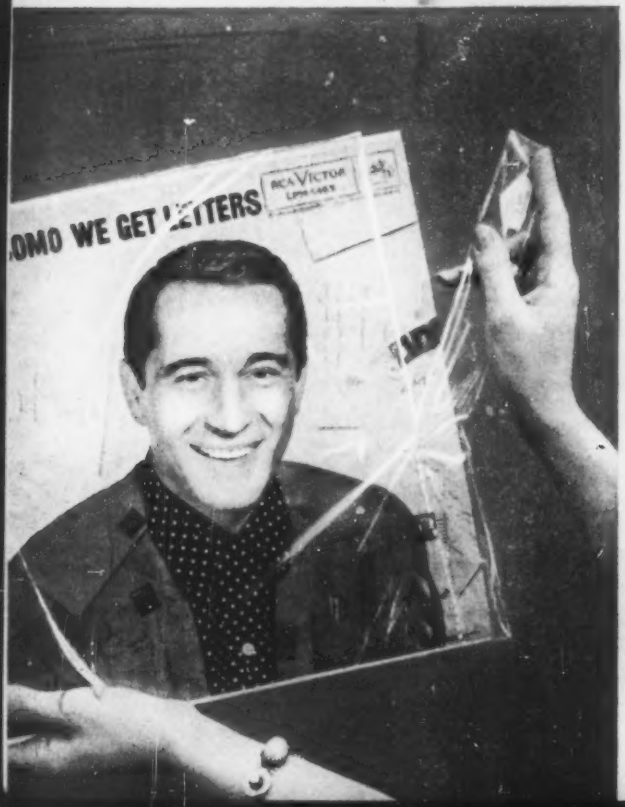
2. They'll reach for your product — and buy more of it — when it's packaged in a bag that's easy to grasp and carry. Equitable's popular built-in handle "Take-Hold" bag stimulates impulse and multiple-unit sales.

8 more ideas to

1. THIS SEALED BAG Z-I-P-S OPEN SO NEATLY IT'S REUSABLE!

An exclusive Equitable development, the perforated tear-strip on the new "Open-E-Zee"* polyethylene bag allows re-use by consumers as a protective cover. This easy-opening feature offers your product extra sales appeal at slight additional cost. If you now prepackage in sealed polyethylene bags, it will pay to try "Open-E-Zee" bags.

*Pat. Pend.



3. Sells on sight! . . . sells on touch! With Equitable's "Redd-E-Close"* polyethylene bags shoppers can "feel the goods." Its built-in, overlapped self closure provides complete protection of contents and permits inspection without damaging the package. *Pat. No. 2,709,467

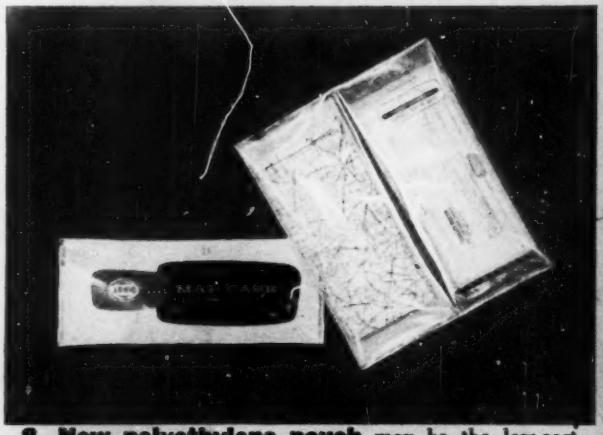
4. Children your market? Use inexpensive "Fun-E-Face" bags to spur sales of your product. Equitable prints colorful pirate, clown or spaceman masks on paper and polyethylene bags. Check our trick or treat bags, too.

5. Forecast: longer life and greater sales appeal for perishables prepackaged in Equitable polyethylene bags. Also retain flavor, protect from unsanitary consumer handling. Equitable offers all styles, handsomely printed in multi-color.

7. Almost any business will find it pays to use these colorful "walking posters" for special consumer and trade promotions. Handy, reusable s opping bags by Equitable offer great promotional impact at little cost.

help you sell and save

6. Box-like bag offers savings in container, storage and shipping costs. Equitable's new sturdy, self-opening "Ship-Shape" bag makes an ideal shipper for many packaged products as well as bulk items.



8. New polyethylene pouch may be the low-cost, long-lasting giveaway you need. Multi-pocket "Pol-E-Pouch" by Equitable promotes your printed message as it protects maps, policies, service manuals, other important papers.

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Pre-assembled
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for Protective
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made to your exact
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for faster packing
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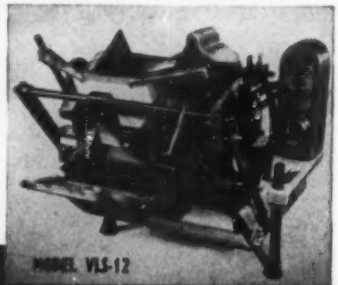
LABELS on BAGS sealed Faster, Better!
The machine with $500 in EXTRA FEATURES at no extra cost!

A heavy-duty heat sealer that is ruggedly constructed for safe, foolproof operation at speeds up to 40 per minute! Folds top of bags up to 12" wide (any length) and attaches a saddle label while sealing — all in one automatic operation! Makes neat, strong seals with cello, poly or saran. High speed motor, full scale vacuum pump and positive spring action on folding bar —
PLUS SIX EXCLUSIVE ENGINEERING FEATURES
WRITE FOR DETAILS!



MERCURY HEAT SEALING EQUIPMENT CO.
2601 N. HOWARD ST., PHILADELPHIA 33, PA
YEARS AHEAD IN DESIGN!

Bright institutionals

[*Continued from page 107*]

and black for Maxwell House with the "good to the last drop" cup symbol silhouetted in reverse white; red-orange and brown for "Bouquet," gold and brown for "Prima." Blue, orange and gold bags are now clearly differentiated. Brand names stand out boldly. A printing of the words, "Hotel and Restaurant," runs horizontally across the middle of each package, extending beyond the rectangular color panel, believed to add dimension and pleasing visual interruption to the squareness of the label area.

The same treatment has been adapted to lithographed cans and has been modified only slightly to carry over family resemblance and easy identification to all shipping containers. The rectangular color panel and the "Hotel and Restaurant" band, the company says, may eventually become a simple design device to tie in packages for products other than coffee in the General Foods institutional family of products. At the bottom of the color panel on every package is the GF insignia of the Institutional Products Div. of General Foods Corp.

Simplicity of the design treatment against the bright white backgrounds gives strength and quick recall. Once seen in the identifying colors, it's easy to remember. And judging from the file of letters received from restaurateurs and wholesale distributors, says General Foods, the packages are already making the famous name of Maxwell House even more famous.

Flour cartons

[*Continued from page 105*]

background with a stippled white area.

Prime spark for the company's redesign program was the success of "Zoom," Fisher's whole-wheat cereal. Launched during World War II, this product has served as a testing ground for the colorful ideas which are now embodied in its powerful blue-and-yellow package.

The acceptance of this color combination prompted the company to try a similar treatment on its other products.

But surface design is not the only

unusual feature of these flours. The new carton and overwrap are considered revolutionary for white flour and it is said to be the first use of such containers for an entire family of flour products.

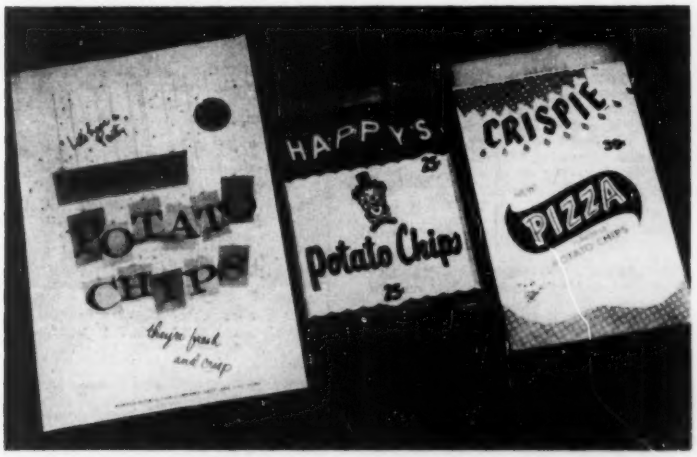
With one exception, the carton material for the variety flours is 0.026-in. sulphite board. The overwrap is 60-lb. coated stock in all cases. For the wheat germ, however—a product with high oil content that is particularly subject to oxidative rancidity—further protection is needed. This carton is constructed of 0.023-in., full-bending chipboard, laminated to 25-lb., opaque greaseproof paper.

An interesting pre-packaging sterilization technique is used by Fisher on four of its flour products to insure positive product purity, eliminate conventional bin fumingation and extend shelf life.

In this heat treatment, the flour being packaged—cracked wheat and/or whole-wheat cereal—is fed into an oscillating, stainless-steel trough 25 ft. long, where temperature of the product is raised in 30 sec. to 160 deg. F. by a series of infra-red radiant heaters. The flours then are promptly packaged at a temperature of about 150 deg., thereby sterilizing the cartons as well, according to the company. Various automatic controls prevent overheating in the sterilizer and enable operators to control product flow from the packaging room.

Award winners in potato-chip-bag competition

Fifteen of the country's most sales-appealing glassine potato-chip bags won awards for their designers, converters and owners at the 21st annual conference of the National Potato Chip Institute held in Hollywood, Fla., last month. Winners were selected in a design competition sponsored by the Glassine & Greaseproof Manufacturers Association, which announced the awards at a meeting attended by more than 500 N.P.C.I. members.



First place was awarded to the Porter Potato Chip Co., Salt Lake City, Utah, for a bag (left in photo above) designed by Ralph H. Reynolds, Salt Lake City, and manufactured by Oneida Paper Products Co., Clifton, N. J. Second place went to Happy's Potato Chip Co., Minneapolis, Minn., for a bag (center in photo) designed and manufactured by Milprint, Inc., Milwaukee, Wis. Third place was won by Crispie Potato Chip Co., Stockton, Calif., for its "Pizza Flavored" chip bag (right in photo) made by Milprint, Inc., and designed by Walter Landor & Associates, San Francisco.

Silver engraved plaques were presented to the three top winners by Charles H. Leach, secretary-treasurer of GGMA.

Judges were Pearl Hagens, senior editor, MODERN PACKAGING; Harvey F. Noss, executive vice president, National Potato Chip Institute, and Robert W. Mueller, editor of *Progressive Grocer* and vice president of Butterick Co., Inc., publishers.

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Equipment gives you

Performance Plus . . .

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The Arenco Machine Company of New York is proud of the outstanding performance of its filling and capping machines—proud, too, of the service it provides to assure prompt delivery, accurate installation and perfect performance.

Typical Arenco personalized service is the experience of Riker Laboratories in Los Angeles. Riker urgently needed an Arenco capping machine to implement production. To meet Riker time requirements Arenco delivered the equipment by air, non-stop from Denmark across the North Pole to Riker Laboratories in Los Angeles!

The unit "was delivered as scheduled", said a Riker Laboratories spokesman, "with a minimum of effort on our part, and we are most grateful to the Arenco Machine Company for their splendid cooperation in this matter."

GAO Automatic Tube Filling and Closing Machine

GAC Semi-Automatic Jar Filling Machine

The Arenco Machine Company has long been known by its customers for the outstanding performance of its quality machines and the personalized, interested, [illegible] service it makes available.

VUV Bulk Materials Packager

Capsolut Vial Capping and Sealing Machine

If this is the kind of machinery—and service—your company demands, write today to

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Manufacturers of filling, capping, sealing and packing machines.

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FOR SALE—30" KIDDER 4-COLOR FLEXOGRAPHIC PRESS—Immediate delivery. Equipment: 7½ H.P. Reliance drive, gas drying including between color drying, continuous running ink fountain rollers, hydraulic central impression throw-off, hydrowind, 3 cooling rollers. May be seen running. Reply Box 804, Modern Packaging.

VACUUM FORMING MACHINE, automatic, preferably 2 stations, bed size 20 x 30" or larger. Reply Box 805, Modern Packaging.

FOR SALE—One #4 and one #1 **SIMPLEX FOLDOVER CELLO MACHINE**. Both complete with electric eye. Hole puncher and other attachments, plus many formers. Two #4-7 Simplex Poly Machines. Complete with eye and all attachments. Can be seen in operation. Perfect condition. Apply Box 812, Modern Packaging.

BRIGHTWOOD BOX MACHINES—"Universal" models, serial nos. 29 and 30 motorized with assistant sizes metal forms. Also "Standard" 6" serial no. 774R; N.J. Pony Labelrite model 86MX; Staude Right Angle Folding Box Gluer. Write for "Used Machinery" listing on: sheeters, slitters, rewinders, diecutters, printers, embossers and for paper converting, set-up box, folding carton and corrugated box machines. Greggory Inc., 203 N. Wabash, Chicago, Ill.

JUST SECURED—MOST MODERN PACKAGING AND FOOD PROCESSING MACHINERY. Equipment installed within last 2 years available at great savings. 4—Hayssen Model F Compaks with net weight scales, bulk and dribble feeds, electric eyes. 3—Package Machinery Model C Transwraps, with net weight scales, bulk and dribble feeds, electric eyes. 1—Package Machinery Model B Transwrap, Auger feed, electric eye. 8—Scandia Model SFS6F high speed automatic wrappers with electric eyes. 4—Ceco Model 40-9½-GG Automatic Adjustable Cartoning Units. Also Model TT. 2—Hayssen Model 7-17 Box Wrappers. 1—Pneumatic Scale Automatic Carton Feeder, Bottom Sealer and Top Sealer with interconnecting conveyors. 1—Pneumatic Scale Rotary Carton Top Sealing Unit. 1—Ceco Model A3901-12 Cartoning Machine with compression unit. 1—Schroeder Corrugated Carton Sealer. 2—George H. Fry Bag Heat Sealer, Model CBS. 1—Amsco Sealer. 4—Stokes & Smith Model G1 and G2 Auger Powder Fillers. 2—Mateer Model 31-A Powder Fillers. 1—Karl Kiefer Rotary Bottle Filler. 1—Benjamin Betner Model 104 Bag Closing Machine. 1—Stokes & Smith Box Sealer. 6—Fitzpatrick Model D-6 Stainless Steel Comminuters. 4—Day size G, 1500 lb. Ribbon type Powder Mixers. Rietz Disintegrators, Entoleter types BF2 and BF4, Kettles, other misc. equipment. Complete details and prices available on request. UNION STANDARD EQUIPMENT COMPANY, 318 Lafayette Street, New York 12, N. Y., Phone: Canal 6-5333.

FOR SALE—One used six-color 30" Kidder Press, A-1 condition, purchased 1952 complete with automatic splicing and rehumidification units and scan-a-web. Box 816, Modern Packaging.

ONE NEW ERA PRESS Model 2/0 12 x 12, including 3 color printing, steam dryer, toggle head for die cutting, three punch heads, slitters, and cutoff knife, less than 1½ years old. Also 1 New Era Model 2/0 equipped same as above except only 1 color, less than 1 year old. Mr. McLaughlin, Sherman Paper Products Corporation, Newton Upper Falls, Mass.

Machinery and Equipment Wanted

URGENTLY NEEDED—ACRYLIC SCRAP—in any form. Contact us for our latest quotations. Claude P. Bamberger, Inc., One Mount Vernon St., Ridgefield Park, N.J. Tel: HUbbard 9-5330.

Help Wanted

WANTED—PACKAGING SALESMAN desiring side line flexograph printed boxes, box wraps, etc. Good commission. Eastern territory completely open. All industries served; have just developed new in-line protective coating and printing process, offering unique advantage for food cartons. Reply Box 811, Modern Packaging.

FLEXOGRAPHIC PRINTING SUPERINTENDENT wanted by prominent Midwestern converter. Should be exp. with cellophane and polyethylene. Advise complete background, all replies confidential. Our employees know of this ad. Box 814, Modern Packaging.

BROKERS WANTED
Plastic Boxes Territory immediately available for complete line of plastic containers suitable for drug, hardware, cosmetics, and pharmaceutical fields. Write giving full details to Gilbert Plastics, Inc., 1415 Chestnut Ave., Hillside, N. J.

BROKERS WANTED
Aerosol Fleid—Territory immediately available for sale of established line of stack caps for aerosol cans. Write giving full details to Gilbert Plastics, Inc., 1415 Chestnut Ave., Hillside, N. J.

SALES SERVICE ASSISTANT—Major full line consumer package designers and converter located N.Y.C. has opening for high caliber man about 30 who likes detail, has good sales sense and knowledge of customer relations. Will handle estimating, sales-production coordination and some service selling. Experience in graphic art production desirable. Send detailed resume and salary requirements to Box 808, Modern Packaging.

ENGINEER for industrial paper and film converting company located in new plant in suburbs of midwestern city. Permanent position with a reliable growing concern. You will be in complete charge of machine design, building and maintenance. Diversification of product line insures interesting and challenging work. Good salary, profit sharing bonus and pension plan and stock purchase plan. Please send resume of your experience, education and personal history to Box 803, Modern Packaging.

PACKAGING SALESMAN — Experienced printed consumer packaging, for major Eastern film converter-lithographer. Full line film, paper and board products from six manufacturing divisions. Top design staff. Openings Metropolitan New York, Baltimore-Washington aeras. Salary or salary and commission according to experience. Send full details, including minimum salary, to Box 809, Modern Packaging.

SEVERAL POSITIONS OPEN for sales correspondents, expeditors with leading flexible packaging manufacturer. Location, Clifton, New Jersey. Expansion of this thirty-year-old multi-plant operation is creating many future opportunities for men selected. Salary dependent on experience. Submit resume, salary requirements to: Personnel Dept., Oneida Paper Products, Inc., 10 Clifton Boulevard, Clifton, New Jersey.

PACKAGING PERSONNEL
Positions Filled and Secured. A Confidential Nationwide Service for employers seeking personnel and individuals seeking new positions. Inquiries invited. Reply to Graphic Arts Employment Service, Est. 1952, Helen M. Winters, Manager; Dept. PAC-11, 307 East 4th Street, Cincinnati 2, Ohio. Phone CHerry 1-2202.

PACKAGE ENGINEER & DESIGNER WANTED— Multi corrugated box plant located on the eastern seaboard in the vicinity of New York offers excellent opportunity to right party. You will be given top position in this department of our organization if chosen. All replies confidential. Box 800, Modern Packaging.

FLEXIBLE PACKAGING SALESMEN
Leading national company with sales of over 350 million dollars has rare openings for energetic, experienced representatives with established contacts among converters, printers and end-users of polyethylene and specialty film laminates. Must be alert and able to adapt to newest materials and techniques. Suitable salary or commission arrangement based on territory. Representatives carrying compatible lines will be considered. Write, stating full details of business experience to Mr. W. E. Channing, St. Regis Paper Co., 684 Nepperhan Avenue, Yonkers 2, N. Y.

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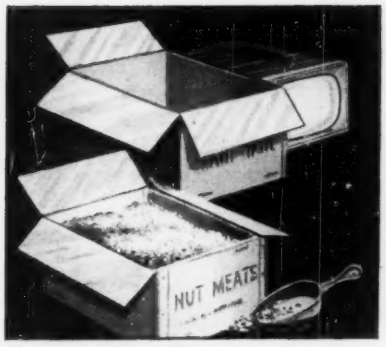
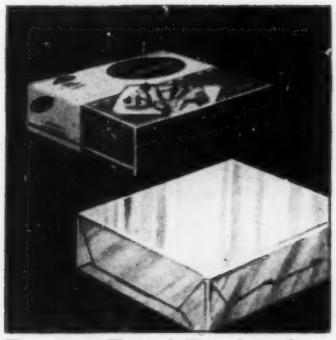
Colored Films and Bottles



Corrugated Boxes



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Allied Chemical & Dye Corporation
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SUPPLEMENTARY LINE AVAILABLE—Salesman wanted to sell a line of glass and plastic containers, including closures, for a leading New York distributor. Territory open—State of Connecticut. Prefer man now calling on food, drug, pharmaceutical and cosmetic packers with other non-competitive packaging materials. Our complete line should prove profitable as an adjunct to your present lines. Submit complete resume, including lines presently carried. J. Rabinowitz & Sons, Inc., 2 Hanson Place, Brooklyn 17, N. Y.

DEVELOPMENT & PURCHASING EXECUTIVE—Must be experienced in paperboard converting industry. To coordinate purchasing of board and related materials, develop raw materials and end-product specifications, develop new uses for existing and new materials in board, film, foil, and plastic fields. Top-level position with opportunity. Send complete resume, including salary expected to Director of Industrial Relations, P. O. Box 4417, Atlanta 2, Georgia.

SALES ENGINEER—Leading manufacturer of Flexographic and Rotogravure Printing Presses has opening for sales engineer in New York and adjoining states. Must have both sales and technical experience. Salary plus commission basis with car and expenses provided. A real opportunity for right man. Give qualifications, availability and earnings expected. Box 806, Modern Packaging, 575 Madison Ave., New York 22.

HELP WANTED by New York firm. Mechanic, 30-40 years, with knowledge of machine tools and experience assembling and installing automatic machines. Answer Box 817, Modern Packaging.

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CARTON CONSTRUCTION DESIGNER with five years experience in folding box industry. Sample maker. Thoroughly familiar with manufacturing equipment. Specialize in developing intricate construction problems. Knowledge of automatic packaging machinery. 23 years of age. Seeking opportunity. Box 810, Modern Packaging.

Miscellaneous

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WANTED—Your surplus stocks of Paper Cellophane, etc. Will pay cash for any and all types of material from industrial components to finished consumer items. Contact Norman Ross, The Danor Co., 359 Broadway, New York 13, N. Y. CAnal 6-4550.

ADDITIONAL PACKAGE SOURCES NEEDED—Expanding package sales organization particularly needs sources for specialized folding boxes and transparent packagings. We are well rated commission operatives selling the package custom in Pittsburgh for over fifteen years. Sales last year exceeded $500,000.00. If you are the manufacturer of outstanding consumer goods packagings, and are interested in business from the Pittsburgh territory, please write in confidence to Box 801, Modern Packaging.

AVAILABLE—100,000 square feet, one floor, on 7½ acres, for the establishment or expansion of packaging and distribution plant. Located in Bay area, California. 400-foot spur off main railroad line; storage and loading area with both water and highway frontage. Financial assistance available. Write or wire for details—Paxton Investment Company, 110 Sutter St., San Francisco, California.

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February 1958

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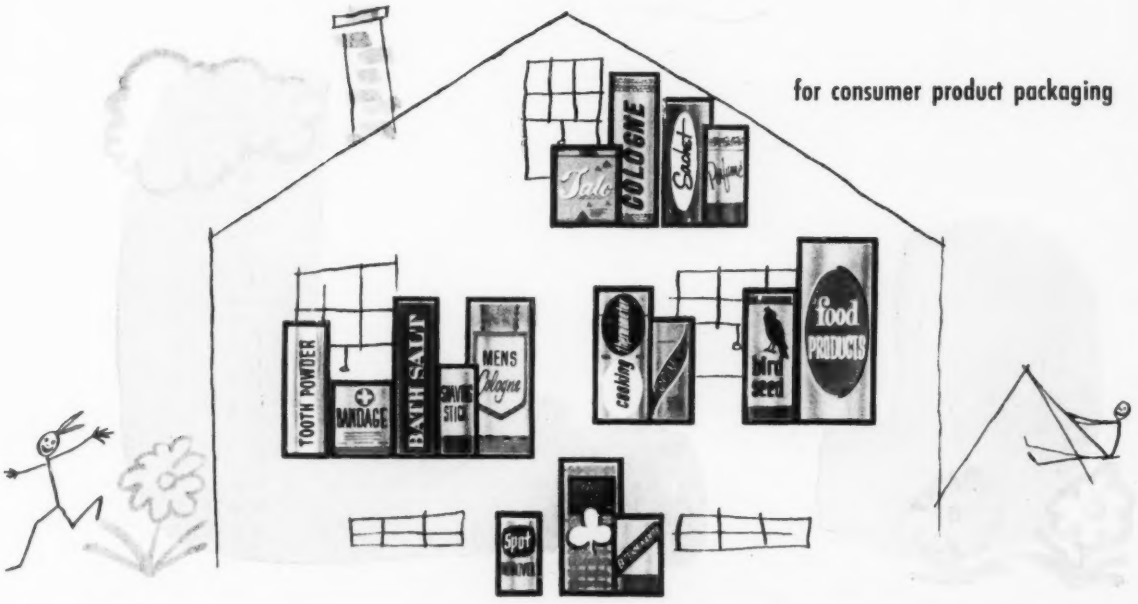

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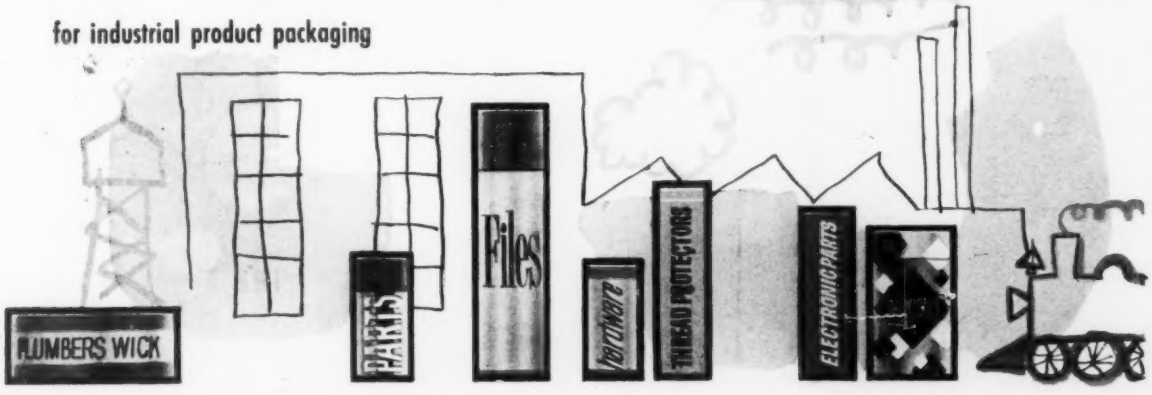

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